Dell™ OptiPlex™ GX150 System User's Guide

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NOTE: You can obtain the latest version of this document from the Dell | Support website at ***support.dell.com****.*

Models DHS, DHP, and DHM

Notes, Notices, and Cautions

Notes, notices, and cautions are used as follows:

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

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About Your Computer: Dell™ OptiPlex™ GX150 System User's Guide

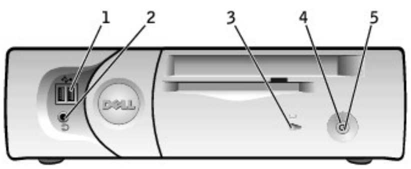
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Front View

The following figures show the controls, indicators, and features located on the front panel of the small form-factor, small desktop, and small mini-tower systems.

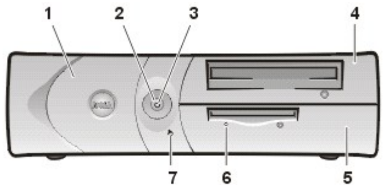
Front View of the Small Form-Factor System

Small Form-Factor Computer



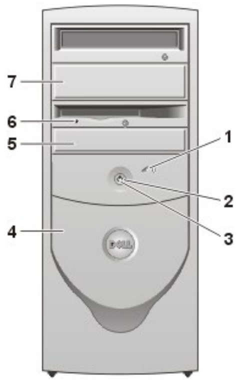
1	USB connectors (2)
2	Headphone connector
3	Hard drive access indicator
4	Power button
5	Power indicator

Front View of the Small Desktop System



1	Front-panel door
2	Power button
3	Power indicator
4	Removable optical drive front panel
5	Removable diskette drive front panel
6	Diskette drive access indicator
7	Hard drive access indicator

Front View of the Small Mini-Tower System

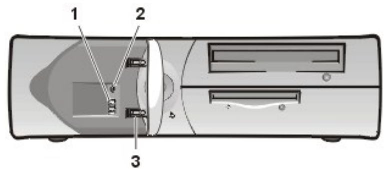


1	Hard drive access indicator
2	Power indicator
3	Power button
4	Front-panel door
5	Removable diskette drive front panel
6	Diskette drive access indicator
7	Removable optical drive front panel

Front-Panel Door

Open the front-panel door to access two Universal Serial Bus (USB) connectors and the headphone connector. This door is removable; if you remove it or accidentally knock it off its hinges, it snaps back in place.

View With the Front-Panel Door Open on the Small Desktop System

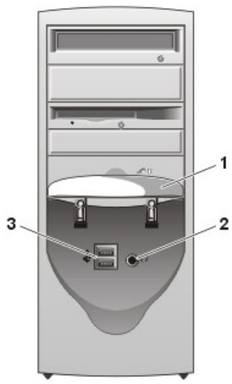


1 USB connectors (2) (do not use these front connectors for USB keyboards or mice)

2 Headphone connector

3 Breakaway hinges (2)

View With the Front-Panel Door Open on the Small Mini-Tower System



1 Front-panel door, with two breakaway hinges

2 Headphone connector

3 USB connectors (2) (do not use these front connectors for USB keyboards or mice)

Power Button

The power button controls the system's AC input power.

The Microsoft® Windows® 98, Windows 98 Second Edition (SE), Windows 2000, and Windows XP operating systems let you configure the function of the power button through the Advanced Configuration and Power Interface (ACPI) feature, as shown in the following table.

NOTICE: To turn off your computer system, perform an orderly system shutdown using the operating system menu when possible.

Power Button Behavior Under Microsoft Windows 98, Windows 98 SE, Windows 2000, and Windows XP Operating Systems With ACPI

Action	Results		
	System Turned On and ACPI Enabled	**System in Standby Mode**	**System Turned Off**
Press power button	System goes into standby mode or turns off (depending on the operating system setup)	System turns on	Boots and system turns on
Hold power button for 6 seconds*	System turns off	System turns off	Boots and system turns on

Pressing or holding the power button to shut down the system may result in data loss. Use the power button to shut down the system only if the operating system is not responding.

The following table shows power button functions for the Windows 98, Windows 98 SE, Windows 2000, and Windows XP operating systems that have the ACPI feature disabled.

Power Button Behavior Under Microsoft Windows 98, Windows 98 SE, Windows 2000, and Windows XP (With Dell AutoShutdown Loaded)

Action	Results		
	System Turned On and ACPI Disabled	**System in Suspend Mode**	**System Turned Off**
Press power button	System turns off immediately	System turns off immediately	Boots and system turns on
Hold power button for 6 seconds*	System turns off	System turns off	Boots and system turns on

Pressing or holding the power button to shut down the system may result in data loss. Use the power button to shut down the system only if the operating system is not responding.

The following table shows power button functions for Microsoft Windows NT® operating systems.

Power Button Behavior Under Microsoft Windows NT (With Dell AutoShutdown Loaded)

Action	Results	
	System Turned On	**System Turned Off**
Press power button	System shuts down	Boots and system turns on
Hold power button for 6 seconds*	System turns off	Boots and system turns on

Pressing or holding the power button to shut down the system may result in data loss. Use the power button to shut down the system only if the operating system is not responding.

If the system does not turn off when you press the power button, the system may be hung. Press and hold the power button until the system turns off completely (this process may take several seconds). If the system is hung and the power button fails to function properly, unplug the AC power cable from the computer, wait for it to completely stop running, and plug in the AC power cable. If the system does not restart, press the power button to restart the system.

Power Indicator

The power indicator contains a light-emitting diode (LED) that illuminates in two colors and blinks or remains solid to indicate different states (normal and nonnormal). The following are normal indicators:

- No light — system is in the off state (S4, S5, or mechanical OFF)
- Steady green — normal operating state
- Blinking green — low-power state (S1 or S3)

NOTE: Your system can resume from the S3 state (suspend to RAM) in several ways. Pressing the power button always works. Certain USB devices also wake the system from S3, and the action required varies by device. Check your device documentation for details. Remote Wake Up also creates an S3 wake event if enabled in system setup and in your operating system. Personal System/2 (PS/2) wake events also vary depending on your operating system. For example, PS/2 mice will not wake from S3 in Windows 98 SE or Windows Millennium (Me), but will wake from S3 in Windows 2000 or Windows XP if enabled in the operating system (OS). PS/2 keyboards will always wake the system from S3 in Windows 98 SE or Windows Me and will wake from S3 in Windows 2000 or Windows XP if enabled in the OS.

See "Diagnostic LEDs" for a description of nonnormal indications.

Diskette Drive Access Indicator

The diskette drive access indicator lights when the drive is reading data from, or writing data to, a diskette. Wait until this indicator turns off before you remove the diskette from the drive.

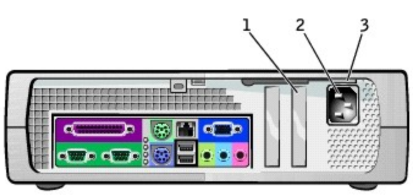
Hard Drive Access Indicator

The hard drive access indicator lights when the system is reading data from, or writing data to, the drive.

Back View

The following figure shows the connectors and indicators on the back of your computer for attaching external devices.

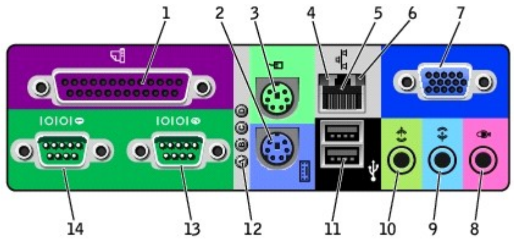
Small Form-Factor System Back-Panel Connectors and Indicators



1 Half-height PCI expansion-card slot
2 AC adapter
3 AC voltage switch

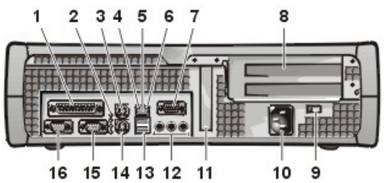
I/O Panel

1 Parallel connector
2 Keyboard connector
3 Mouse connector



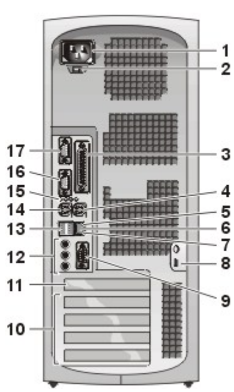
4 Link integrity light
5 Network adapter
6 Activity light
7 Video connector
8 Microphone connector
9 Audio line-in connector
10 Audio line-out connector
11 USB connectors (2)
12 Diagnostic lights
13 Serial 2 connector
14 Serial 1 connector

Small Desktop System Back-Panel Connectors and Indicators



1 Parallel port connector
2 Diagnostic LEDs
3 Mouse connector
4 Link integrity indicator (see "Integrated NIC connector")
5 Integrated NIC connector
6 Activity indicator (see "Integrated NIC connector")
7 Video connector
8 PCI slots
9 AC voltage switch
10 AC power connector
11 Half-height AGP slot
12 Line-out jack, line-in jack, and microphone jack
13 USB connectors
14 Keyboard connector
15 Serial port 2 connector
16 Serial port 1 connector

Small Mini-Tower System Back-Panel Connectors and Indicators



1 AC power connector
2 AC voltage switch
3 Parallel port connector
4 Mouse connector
5 Link integrity indicator (see "Integrated NIC connector")
6 Integrated NIC connector
7 Activity indicator (see "Integrated NIC connector")
8 Padlock ring
9 Video connector
10 PCI expansion-card slots
11 AGP slot
12 Line-out jack, line-in jack, and microphone jack
13 USB connectors
14 Keyboard connector
15 Diagnostic LEDs
16 Serial port 2 connector

17 Serial port 1 connector

Connecting Devices

When you connect external devices to your computer's back panel, follow these guidelines:

- Check the documentation that accompanied the device for specific installation and configuration instructions.

  For example, you must connect most devices to a particular input/output (I/O) port or connector to operate properly. Also, external devices like a mouse or printer usually require you to load device drivers into system memory before they will work.

- Always attach external devices *while your computer is turned off.* Then turn on the computer *before* turning on any external devices, unless the documentation for the device specifies otherwise. (If the computer does not seem to recognize the device, try turning on the device before turning on the computer.)

  NOTICE: When you disconnect external devices from the back of the computer, wait 5 seconds after turning off the computer before you disconnect any devices to avoid possible damage to the system board.

Parallel Port Connector

This is used to connect printers. Default designation is LPT1.

NOTE: The integrated parallel port is automatically disabled if the system detects an installed expansion card containing a parallel port configured to the same address as specified in "Additional System Setup Options."

Mouse Connector

Turn off the computer and any attached peripherals before connecting a mouse to the computer. If your system uses Microsoft Windows 2000 or Windows NT 4.0, Dell installed the necessary mouse drivers on your hard drive.

USB Connectors

These are used to attach USB-compliant devices such as keyboards, mice, printers, and computer speakers to your system. If you use a USB keyboard or mouse, attach these devices to the back panel connectors only.

Integrated NIC Connector

The network interface controller (NIC), which includes a Remote Wake Up feature, has the following indicators:

- A yellow activity indicator flashes when the system is transmitting or receiving network data. (A high volume of network traffic may make this indicator appear to be in a steady "on" state.)

- A dual-colored link integrity indicator, which is green when there is a good connection between a 10-megabit per second (Mbps) network and the NIC and orange when there is a good connection between a 100-Mbps network and the NIC. When the indicator is off, the computer is not detecting a physical connection to the network.

Network Cable Requirements

The NIC connector attaches an unshielded twisted pair (UTP) Ethernet cable to your system. Press one end of the UTP cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub, depending on your network configuration, and press the other end of the UTP cable into the NIC connector until the cable snaps securely into place.

Dell recommends the use of Category 5 wiring and connectors for our customers' networks.

Line-In Jack

This jack is used to attach record/playback devices such as cassette players, CD players, and VCRs. Connect the line-out cable from any of these devices to the line-in jack.

Line-Out Jack

This jack is used to attach computer speakers. This jack is amplified, so speakers with integrated amplifiers are not required. Connect the audio cable from the speakers to this jack.

Microphone Jack

This jack is used to attach a standard personal computer microphone. Connect the audio cable from the microphone to the microphone jack.

Video Connector

This connector is used to attach a video graphics array (VGA)-compatible monitor to your system.

NOTE: Do not use this connector if your computer contains an add-in accelerated graphics port (AGP) and/or Peripheral Component Interconnect (PCI) card. This connector can be used for a secondary display if multi-monitor is supported and enabled in your operating system and you have an add-in PCI video card.

Serial Port Connectors

Default port designations: COM1 for serial port 1 and COM2 for serial port 2. You can reassign the serial port's designation if you add an expansion card containing a serial port using this designation.

If you set the system's serial ports to **Auto** in system setup and add an expansion card containing a serial port configured to a specific designation, the computer automatically maps (assigns) the integrated ports to the appropriate COM setting as necessary.

Before you add a card with a serial port, check the documentation that accompanied your software to make sure that the software can be mapped to the new COM port designation.

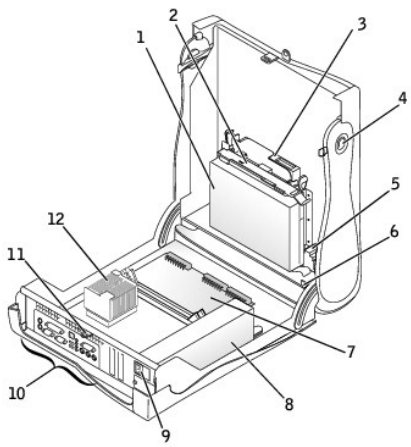
Keyboard Connector

Attach the keyboard cable to the 6-pin connector on the back panel.

Inside Your Computer

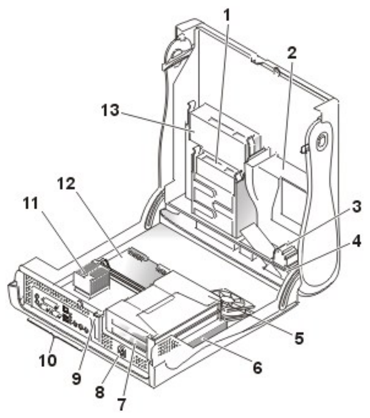
The following figures show the desktop systems with their covers opened.

Inside the Small Form-Factor Chassis



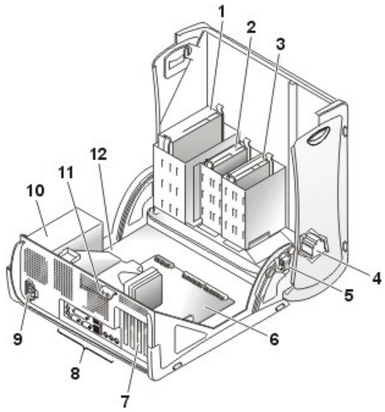
1	Hard drive
2	3.5-inch floppy drive
3	CD drive
4	Cover release buttons (2)
5	Internal speaker
6	Chassis intrusion switch
7	System board
8	Power supply
9	AC power connector
10	I/O ports and connectors
11	Padlock ring
12	Heat sink and blower assembly

Inside the Small Desktop Chassis



1	Diskette drive
2	Hard drive
3	Internal speaker
4	Chassis intrusion switch
5	Expansion-card cage
6	Power supply
7	Expansion-card slots
8	AC power connector
9	Padlock ring
10	I/O ports and connectors
11	Microprocessor and heat sink
12	System board
13	Optical drive

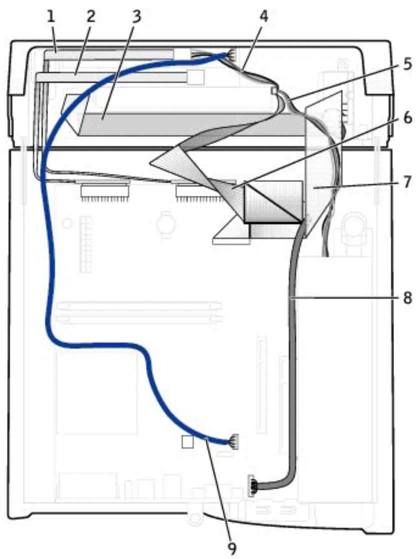
Inside the Small Mini-Tower Chassis



1 Optical drive
2 Diskette drive
3 Hard drive
4 Internal speaker
5 Chassis intrusion switch
6 System board
7 Expansion-card slots
8 I/O ports and connectors
9 AC power connector
10 Power supply
11 Padlock ring
12 Microprocessor and heat sink shroud

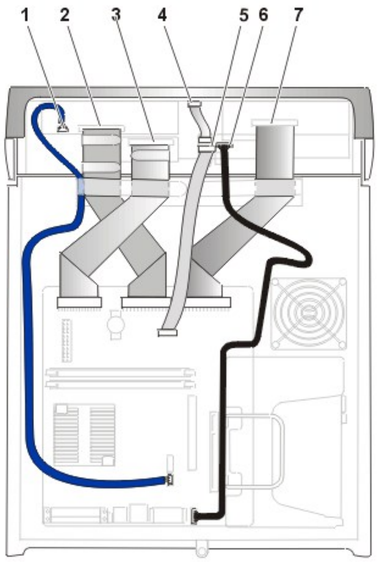
System Cables

Cabling in the Small Form-Factor Desktop System



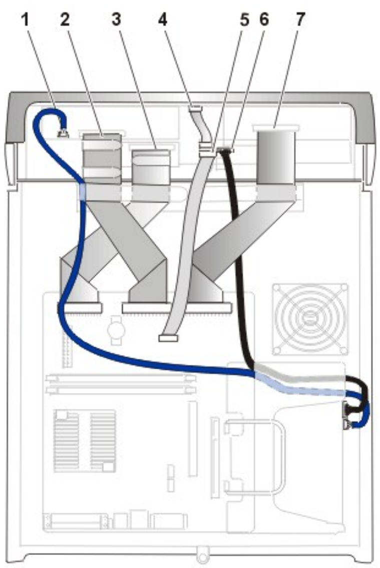
1 CD drive data cable
2 Floppy drive data cable
3 Control-panel cable
4 CD drive power cable
5 IDE drive power cable (hard drive)
6 IDE data cable (hard drive)
7 Input/output cable
8 Input/output audio cable
9 CD audio cable

Cabling in the Small Desktop System Without a Sound Card Installed



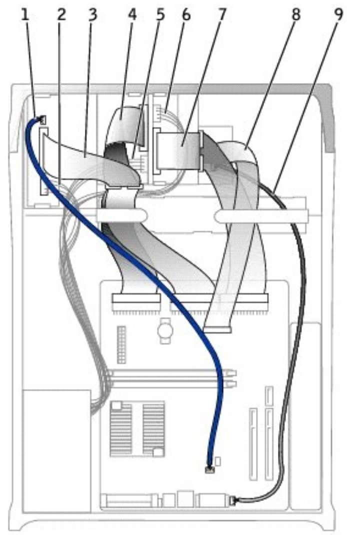
1 Optical drive audio cable
2 Optical drive cable
3 Diskette drive cable
4 Control panel cable
5 Front input/output cable
6 Front input/output audio cable
7 EIDE interface cable (hard drive)

Cabling in the Small Desktop System With a Sound Card Installed



1 Optical drive audio cable
2 Optical drive cable
3 Diskette drive cable
4 Control panel cable
5 Front input/output cable
6 Front input/output audio cable
7 EIDE interface cable (hard drive)

Cabling in the Small Mini-Tower System



1 Optical drive power cable

2 Optical drive audio cable

3 Optical drive data cable

4 Diskette drive power cable

5 Diskette drive data cable

6 Hard-drive power cable

7 Hard-drive data cable

8 Front I/O cable

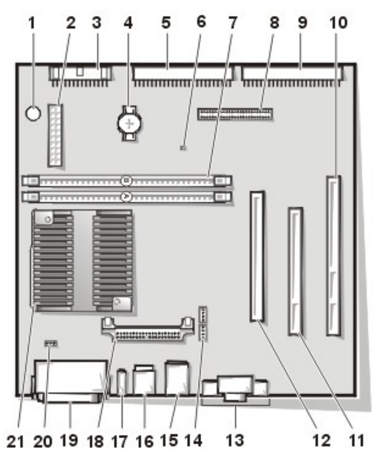
9 Front I/O audio cable

The following table provides a color code key for the cables inside your system.

Hard drive	Blue
Diskette drive	Black
Optical drive	Orange
USB	Gray
ATA, IDE, or EIDE drive	Green
Control panel	Yellow
CD audio	Blue
System audio	Black

System Board Components

Front of Computer



Back of Computer

1 PC speaker

2 DC power connector

3 Diskette drive connector

4 Battery

5 EIDE2 connector

6 Auxiliary power indicator

7 Memory module (DIMM) connectors (2)

8 Front-panel cable connector

9 EIDE1 connector

10 PCI 2 riser connector (not populated on the small form-factor chassis, used as the riser in the small desktop chassis, and can be populated with PCI expansion card in the small mini-tower chassis)

11 PCI 1 connector (not able to be populated on the small desktop chassis)

12 AGP/GPA (AIMM) connector

13 Video connector (upper) and audio connectors (lower)

14 CD audio and telephony connectors

15 NIC connector (upper) and USB connectors (2) (lower)

16 Keyboard (lower) and mouse (upper) connectors

17 Diagnostic LEDs

18 Voltage regulator module (may not be removable on some systems)

19 Parallel port (upper) and serial port (2) (lower) connectors

20 Microprocessor fan connector

21 Microprocessor and heat sink assembly

System Board Labels

The following table lists the labels for connectors and sockets on the system board and gives a brief description of their functions.

System Board Connectors and Sockets

Connector or Socket	**Description**
AGP	Accelerated Graphics Port (AGP) Pro connector
AUDIO	Line-in, line-out, and microphone jacks
AUX_PWR	Auxiliary power indicator
BATTERY	Battery socket
CD-IN	CD-ROM drive audio cable connector
DIAG_LED	Diagnostic LEDs
DIMM_x	Dual in-line memory module (DIMM) socket
DSKT	Diskette drive interface connector
FAN	Microprocessor fan connector
FRONTAUDIO	Front panel audio connector for onboard audio
FRONTPANEL	Front panel cable connector
IDE*n*	EIDE interface connector
KYBD_MOUSE	Keyboard and mouse connectors
MICROPROCESSOR	Microprocessor connector
MODEM	Telephony connector
MONITOR	Video connector
NIC_USB	Integrated NIC connector and USB connectors
PAR_SER1_SER2	Parallel and serial port connectors
PCI1 and 2	PCI expansion card connectors
POWER	Main power input connector
PSWD	Password jumper
VRISER	Riser board connector
SPEAKER	Internal speaker
VRM	Voltage regulator module connector (may not be removable on some systems)

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Additional Information: Dell™ OptiPlex™ GX150 System User's Guide

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Regulatory Notices

Electromagnetic Interference (EMI) is any signal or emission, radiated in free space or conducted along power or signal leads, that endangers the functioning of a radio navigation or other safety service or seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include but are not limited to AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pager, and Personal Communication Services (PCS). These licensed services, along with unintentional radiators such as digital devices, including computer systems, contribute to the electromagnetic environment.

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult a Dell Technical Support representative or an experienced radio/television technician for additional suggestions.

Dell computer systems are designed, tested, and classified for their intended electromagnetic environment. These electromagnetic environment classifications generally refer to the following harmonized definitions:

- Class A is typically for business or industrial environments.
- Class B is typically for residential environments.

Information Technology Equipment (ITE), including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, that are integrated into or connected to the system should match the electromagnetic environment classification of the computer system.

A Notice About Shielded Signal Cables: Use only shielded cables for connecting peripherals to any Dell device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment. For parallel printers, a cable is available from Dell. If you prefer, you can order a cable from Dell on the World Wide Web at http://accessories.us.dell.com.

Most Dell computer systems are classified for Class B environments. To determine the electromagnetic classification for your system or device, refer to the following sections specific for each regulatory agency. Each section provides country-specific EMC/EMI or product safety information.

FCC Notices (U.S. Only)

Most Dell computer systems are classified by the Federal Communications Commission (FCC) as Class B digital devices. However, the inclusion of certain options can change the rating of some configurations to Class A. To determine which classification applies to your computer system, examine all FCC registration labels located on the bottom or back panel of your computer, on card-mounting brackets, and on the cards themselves. If any one of the labels carries a Class A rating, your entire system is considered to be a Class A digital device. If all labels carry an FCC Class B rating as distinguished by either an FCC ID number or the FCC logo (FC), your system is considered to be a Class B digital device.

Once you have determined your system's FCC classification, read the appropriate FCC notice. Note that FCC regulations provide that changes or modifications not expressly approved by Dell could void your authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Class A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This

equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Class B

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The following information is provided on the device or devices covered in this document in compliance with FCC regulations:

- Model numbers: DHS, DHP, and DHM
- Company name: Dell Computer Corporation
  One Dell Way
  Round Rock, Texas 78682 USA

IC Notice (Canada Only)

Most Dell computer systems (and other Dell digital apparatus) are classified by the Industry Canada (IC) Interference-Causing Equipment Standard #3 (ICES-003) as Class B digital devices. To determine which classification (Class A or B) applies to your computer system (or other Dell digital apparatus), examine all registration labels located on the bottom or the back panel of your computer (or other digital apparatus). A statement in the form of "IC Class A ICES-003" or "IC Class B ICES-003" will be located on one of these labels. Note that Industry Canada regulations provide that changes or modifications not expressly approved by Dell could void your authority to operate this equipment.

This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B (ou Classe A, si ainsi indiqué sur l'étiquette d'enregistration) respecte toutes les exigences du Reglement sur le Materiel Brouilleur du Canada.

CE Notice (European Union)

Marking by the symbol CE indicates compliance of this Dell system to the EMC Directive and the Low Voltage Directive of the European Union. Such marking is indicative that this Dell system meets the following set of technical standards:

- EN 55022 — "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment."
- EN 55024 — "Information technology equipment - Immunity characteristics - Limits and methods of measurement."
- EN 61000-3-2 — "Electromagnetic compatibility (EMC) - Part 3: Limits - Section 2: Limits for harmonic current emissions (Equipment input current up to and including 16 A per phase)."
- EN 61000-3-3 — "Electromagnetic compatibility (EMC) - Part 3: Limits - Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to and including 16 A."
- EN 60950 — "Safety of Information Technology Equipment."

NOTE: EN 55022 emissions requirements provide for two classifications:

- *Class A is for typical commercial areas.*
- *Class B is for typical domestic areas.*

RF INTERFERENCE WARNING: This is a Class A product. In a domestic environment this product may cause radio frequency (RF) interference, in which case the user may be required to take adequate measures.

This Dell device is classified for use in a typical Class B domestic environment.

A "Declaration of Conformity" in accordance with the preceding directives and standards has been made and is on file at Dell Computer Corporation Products Europe BV, Limerick, Ireland.

Battery Disposal

Your computer system uses a lithium battery. The lithium battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace it, refer to the section about replacing the battery in your Dell system documentation for instructions.

Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

CCIB Notice (China Only)

On Class A systems, the following warning will appear near the regulatory label:

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

声明

此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其干扰采取切实可行的措施。

EN 55022 Compliance (Czech Republic Only)

This device belongs to Class B devices as described in EN 55022, unless it is specifically stated that it is a Class A device on the specification label. The following applies to devices in Class A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all steps necessary to remove sources of interference to telecommunication or other devices.

Pokud není na typovém štitku počítače uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařízení zařazená do třídy A (ochranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jiných zařízení, je uživatel povinen provést taková opatření, aby rušení odstranil.

VCCI Notice (Japan Only)

Most Dell computer systems are classified by the Voluntary Control Council for Interference (VCCI) as Class B information technology equipment (ITE). However, the inclusion of certain options can change the rating of some configurations to Class A. ITE, including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, integrated into or connected to the system, should match the electromagnetic environment classification (Class A or B) of the computer system.

To determine which classification applies to your computer system, examine the regulatory labels/markings (see Figure 1 and Figure 2) located on the bottom or back panel of your computer. Once you have determined your system's VCCI classification, read the appropriate VCCI notice.

Class A ITE

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Figure 1. VCCI Class A ITE Regulatory Mark

VCCI-A

Class B ITE

This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Figure 2. VCCI Class B ITE Regulatory Mark

MIC Notice (Republic of Korea Only)

To determine which classification (Class A or B) applies to your computer system (or other Dell digital device), examine the Republic of Korean Ministry of Information and Communications (MIC) registration labels located on your computer (or other Dell digital device). The MIC label may be located separately from the other regulatory marking applied to your product. Line three of the label identifies the emissions class for the product—"(A)" for Class A products or "(B)" for Class B products.

NOTE: MIC emissions requirements provide for two classifications:

- Class A devices are for business purposes.
- Class B devices are for nonbusiness purposes.

Class A Device

기 종 별	사 용 자 안 내 문
A급 기기 (업무용 정보통신기기)	이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you may exchange it for a nonbusiness-purpose device.

MIC Class A Regulatory Label

MIC

1. 기기의 명칭(모델명) :
2. 인증번호 :
3. 인증받은 자의 상호 : (A)
4. 제조년월일:
5. 제조자/제조국가 :

Class B Device

기종별	사용자 안내문
B급 기기 (가정용 정보통신기기)	이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

Please note that this device has been approved for nonbusiness purposes and may be used in any environment, including residential areas.

MIC Class B Regulatory Label

MIC

1. 기기의 명칭(모델명) :
2. 인증번호 :
3. 인증받은 자의 상호 : (B)
4. 제조년월일:
5. 제조자/제조국가 :

Polish Center for Testing and Certification Notice

The equipment should draw power from a socket with an attached protection circuit (a three-prong socket). All equipment that works together (computer, monitor, printer, and so on) should have the same power supply source.

The phasing conductor of the room's electrical installation should have a reserve short-circuit protection device in the form of a fuse with a nominal value no larger than 16 amperes (A).

To completely switch off the equipment, the power supply cable must be removed from the power supply socket, which should be located near the equipment and easily accessible.

A protection mark "B" confirms that the equipment is in compliance with the protection usage requirements of standards PN-93/T-42107 and PN-EN 55022: 1996.

Wymagania Polskiego Centrum Badań i Certyfikacji

Urządzenie powinno być zasilane z gniazda z przyłączonym obwodem ochronnym (gniazdo z kołkiem). Współpracujące ze sobą urządzenia (komputer, monitor, drukarka) powinny być zasilane z tego samego źródła.

Instalacja elektryczna pomieszczenia powinna zawierać w przewodzie fazowym rezerwową ochronę przed zwarciami, w postaci bezpiecznika o wartości znamionowej nie większej niż 16A (amperów).

W celu całkowitego wyłączenia urządzenia z sieci zasilania, należy wyjąć wtyczkę kabla zasilającego z gniazdka, które powinno znajdować się w pobliżu urządzenia i być łatwo dostępne.

Znak bezpieczeństwa "B" potwierdza zgodność urządzenia z wymaganiami bezpieczeństwa użytkowania zawartymi w PN-93/T-42107 i PN-EN 55022:1996.

Jeżeli na tabliczce znamionowej umieszczono informację, że urządzenie jest klasy A, to oznacza to, że urządzenie w środowisku mieszkalnym może powodować zakłócenia radioelektryczne. W takich przypadkach można żądać od jego użytkownika zastosowania odpowiednich środków zaradczych.

Pozostałe instrukcje bezpieczeństwa

- Nie należy używać wtyczek adapterowych lub usuwać kołka obwodu ochronnego z wtyczki. Jeżeli konieczne jest użycie przedłużacza to należy użyć przedłużacza 3-żyłowego z prawidłowo połączonym przewodem ochronnym.
- System komputerowy należy zabezpieczyć przed nagłymi, chwilowymi wzrostami lub spadkami napięcia, używając eliminatora przepięć, urządzenia dopasowującego lub bezzakłóceniowego źródła zasilania.
- Należy upewnić się, aby nic nie leżało na kablach systemu komputerowego, oraz aby kable nie były umieszczone w miejscu, gdzie można byłoby na nie nadeptywać lub potykać się o nie.
- Nie należy rozlewać napojów ani innych płynów na system komputerowy.
- Nie należy wpychać żadnych przedmiotów do otworów systemu komputerowego, gdyż może to spowodować pożar lub porażenie prądem, poprzez zwarcie elementów wewnętrznych.
- System komputerowy powinien znajdować się z dala od grzejników i źródeł ciepła. Ponadto, nie należy blokować otworów wentylacyjnych. Należy unikać kładzenia luźnych papierów pod komputer oraz umieszczania komputera w ciasnym miejscu bez możliwości cyrkulacji powietrza wokół niego.

NOM Information (Mexico Only)

The following information is provided on the device(s) described in this document in compliance with the requirements of the official Mexican standards (NOM):

Exporter:	Dell One Dell Way Round Rock, TX 78682
Importer:	Dell Computer de México, S.A. de C.V. Paseo de la Reforma 2620 - 11° Piso Col. Lomas Altas 11950 México, D.F.
Ship to:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Supply voltage:	115/230 VAC
Frequency:	60/50 Hz
Input current rating:	DHS — 2.0/1.0 A DHP — 1.5/0.75 A DHM — 3.0/1.5 A

Información para NOM (únicamente para México)

La información siguiente se proporciona en el dispositivo o en los dispositivos descritos en este documento, en cumplimiento con los requisitos de la Norma Oficial Mexicana (NOM):

Exportador:	Dell One Dell Way Round Rock, TX 78682
Importador:	Dell Computer de México, S.A. de C.V. Paseo de la Reforma 2620 - 11° Piso Col. Lomas Altas 11950 México, D.F.
Embarcar a:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Tensión alimentación:	115/230 VAC
Frecuencia:	60/50 Hz
Consumo de corriente:	DHS — 2.0/1.0 A DHP — 1.5/0.75 A DHM — 3.0/1.5 A

BSMI Notice (Taiwan Only)

BSMI 通告（僅限於台灣）

大多數的 Dell 電腦系統被 BSMI(經濟部標準檢驗局)劃分爲乙類數位裝置。但是，使用某些選件會使有些組態的等級變成甲類。若要確定您的電腦系統適用等級，請檢查所有位於電腦底部或背面板、擴充卡安裝托架，以及擴充卡上的 BSMI 註冊標籤。如果其中有一甲類標籤，即表示您的系統爲甲類數位裝置。如果只有 BSMI 的檢磁號碼標籤，則表示您的系統爲乙類數位裝置。

一旦確定了系統的 BSMI 等級，請閱讀相關的 BSMI 通告。請注意，BSMI 通告規定凡是未經 Dell Computer Corporation 明確批准的擅自變更或修改，將導致您失去此設備的使用權。

此裝置符合 BSMI(經濟部標準檢驗局)的規定，使用時須符合以下兩項條件：

・此裝置不會產生有害干擾。
・此裝置必須能接受所接收到的干擾，包括可能導致無法正常作業的干擾。

甲類

此設備經測試證明符合 BSMI(經濟部標準檢驗局)之甲類數位裝置的限制規定。這些限制的目的是爲了在商業環境中使用此設備時，能提供合理的保護以防止有害的干擾。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。請勿在住宅區使用此設備。

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

乙類

此設備經測試證明符合 BSMI(經濟部標準檢驗局)之乙類數位裝置的限制規定。這些限制的目的是爲了在住宅區安裝時，能防止有害的干擾，提供合理的保護。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。但是，這並不保證在個別的安裝中不會產生干擾。您可以透過關閉和開啓此設備來判斷它是否會對廣播和電視收訊造成干擾；如果確實如此，我們建議您嘗試以下列一種或多種方法來排除干擾：

・重新調整天線的接收方向或重新放置接收天線。
・增加設備與接收器的距離。
・將設備連接至不同的插座，使設備與接收器連接在不同的電路上。
・請向經銷商或有經驗的無線電／電視技術人員查詢，以獲得幫助。

ENERGY STAR® Compliance

Certain configurations of Dell computer systems comply with the requirements set forth by the Environmental Protection Agency (EPA) for energy-efficient computers. If the front panel of your computer bears the ENERGY STAR® Emblem (see figure below), your original configuration complies with these requirements and all ENERGY STAR® power management features of the computer are enabled.

NOTES: As an ENERGY STAR® Partner, Dell has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Any Dell computer bearing the ENERGY STAR® Emblem is certified to comply with EPA ENERGY STAR® requirements ***as configured when shipped by Dell****. Any changes you make to this configuration (such as installing additional expansion cards or drives) may increase the system's power consumption beyond the limits set by the EPA's ENERGY STAR® Computers program.*

ENERGY STAR® Emblem

The EPA's ENERGY STAR® Computers program is a joint effort between the EPA and computer manufacturers to reduce air pollution by promoting energy-efficient computer products. The EPA estimates that use of ENERGY STAR® computer products can save computer users up to two billion dollars annually in electricity costs. In turn, this reduction in electricity usage can reduce emissions of carbon dioxide, the gas primarily responsible for the greenhouse effect, and sulfur dioxide and nitrogen oxides, which are the two primary causes of acid rain.

Computer users can also help to reduce electricity usage and its side effects by turning off their computer systems when they are not in use for extended periods of time—particularly at night and on weekends.

Limited Warranty and Return Policy

The following sections describe the limited warranty for your computer, the manufacturer guarantee for Latin America and the Caribbean, and the return policy for the U.S. and Canada.

Three-Year Limited Warranty (U.S. Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The limited warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this limited warranty. Otherwise, this limited warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This limited warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or Dell Software and Peripherals products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this limited warranty; all other monitors, keyboards, and mice (including those sold through the Dell Software and Peripherals program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this limited warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must call Dell's Customer Technical Support within the warranty period. See "Getting Help" to obtain customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in the continental U.S., where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as floppy disks, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts (freight prepaid) if you use an address in the continental U.S., where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General Provisions

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS LIMITED WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED

WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER SUCH PERIOD.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE PRECEDING LIMITATION MAY NOT APPLY TO YOU.

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS LIMITED WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's three-year limited warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the limited warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard three-year limited warranty described in the preceding text, the option you chose will be listed on your invoice.

Three-Year Limited Warranty (Canada Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-
standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this limited warranty. Otherwise, this limited warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This limited warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or DellWare products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this limited warranty; all other monitors, keyboards, and mice (including those sold through the DellWare program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this limited warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must call Dell's Customer Technical Support within the warranty period. See "Getting Help" to obtain customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in Canada, where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as floppy disks, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts (freight prepaid) if you use an address in Canada, where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General Provisions

DELL MAKES NO EXPRESS WARRANTIES OR CONDITIONS BEYOND THOSE STATED IN THIS LIMITED WARRANTY STATEMENT. DELL DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES OR CONDITIONS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS LIMITED WARRANTY STATEMENT. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION).

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS LIMITED WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's three-year limited warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the limited warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard three-year limited warranty described in the preceding text, the option you chose will be listed on your invoice.

One-Year End-User Manufacturer Guarantee (Latin America and the Caribbean Only)

Guarantee

Dell Computer Corporation ("Dell") warrants to the end user in accordance with the following provisions that its branded hardware products, purchased by the end user from a Dell company or an authorized Dell distributor in Latin America or the Caribbean, will be free from defects in materials, workmanship, and design affecting normal use, for a period of one year from the original purchase date. Products for which proper claims are made will, at Dell's option, be repaired or replaced at Dell's expense. Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing repairs and building replacement products.

Exclusions

This Guarantee does not apply to defects resulting from: improper or inadequate installation, use, or maintenance; actions or modifications by unauthorized third parties or the end user; accidental or willful damage; or normal wear and tear.

Making a Claim

Claims must be made in Latin America or the Caribbean by contacting the Dell point of sale within the guarantee period. The end user must always supply proof of purchase, indicating name and address of the seller, date of purchase, model and serial number, name and address of the customer, and details of symptoms and configuration at the time of malfunction, including peripherals and software used. Otherwise, Dell may refuse the guarantee claim. Upon diagnosis of a warranted defect, Dell will make arrangements and pay for ground freight and insurance to and from Dell's repair/replacement center. The end user must ensure that the defective product is available for collection properly packed in original or equally protective packaging together with the details listed above and the return number provided to the end user by Dell.

Limitation and Statutory Rights

Dell makes no other warranty, guarantee or like statement other than as explicitly stated above, and this Guarantee is given in place of all other guarantees whatsoever, to the fullest extent permitted by law. In the absence of applicable legislation, this Guarantee will be the end user's sole and exclusive remedy against Dell or any of its affiliates, and neither Dell nor any of its affiliates shall be liable for loss of profit or contracts, or any other indirect or consequential loss arising from negligence, breach of contract, or howsoever.

This Guarantee does not impair or affect mandatory statutory rights of the end user against and/or any rights resulting from other contracts concluded by the end user with Dell and/or any other seller.

Dell World Trade LP
One Dell Way, Round Rock, TX 78682, USA

Dell Computadores do Brasil Ltda (CNPJ No. 72.381.189/0001-10)/
Dell Commercial do Brasil Ltda (CNPJ No. 03 405 822/0001-40)
Avenida Industrial Belgraf, 400
92990-000 - Eldorado do Sul – RS - Brasil

Dell Computer de Chile Ltda
Coyancura 2283, Piso 3- Of.302,
Providencia, Santiago - Chile

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Advanced Features: Dell™ OptiPlex™ GX150 System User's Guide

Manageability

- Dell OpenManage™ IT Assistant — the Dell software-management application interface for the Desktop Management Interface (DMI); allows management of system-level information such as system configuration information and Management Information Format (MIF) database values.

  Fault management features:

  - Alerts to warn you about events generated by Self-Monitoring Analysis and Reporting Technology (SMART) drives on a local or remote system
  - An event log that reports **System Name**, **Component Name**, **Date and Time**, **Event Type**, **Event Severity**, **Event Class**, and **Event System**

  Configuration management features:

  - Remote Wake Up support
  - A **System Properties** window that enables network administrators to view, set, or disable certain hardware configuration settings for the local and remote systems in a Dell DMI network
  - Support for the Microsoft® System Management Server (SMS), which allows the exporting of one or more groups to an SMS directory that the SMS administrator can access
  - A monitor component for systems running Windows® 2000 and having a display data channel (DDC)-compliant video subsystem and monitor
  - Automated inventory control of one or more groups for the remote systems in a Dell DMI network
  - Network administrators can automate inventory to occur every day, week, or month at a certain hour, on the hour; or they can enable inventory as needed
  - Support for the application program used to create user-definable attributes (UDAs)

  Asset management features:

  - Remote viewing, entering, and modifying of an asset tag for a remote system in a Dell DMI network
  - Automated and manual mapping of one or more groups to a user-defined directory

  For more information about the Dell OpenManage IT Assistant, see the online Dell OpenManage IT Assistant documentation that accompanied the software.

- Managed boot agent (MBA) — supports multiple preboot environments and allows network administrators to boot the system from a network server.

- Remote Wake Up — allows remote turn-on of a Managed PC system that is either in a sleep state or turned off and remote computer setup, software downloading and installation, file updates, and asset tracking at any time.

  Requirements for use: a network interface controller (NIC) that supports Remote Wake Up in each system; enablement of the **Remote Wake Up** option in system setup.

  NOTE: This feature does not work if the system is shut off using a power strip or surge protector.

- Remote system alert — sends predetermined messages from the system about its operating condition; for example, alert if computer cover is opened

  Requirements for use: an integrated NIC that supports remote system alert in each Managed PC system.

NOTE: *This feature does not work if the system is shut off using a power strip or surge protector.*

- Auto power on — enables automatic turn-on of the computer system either every day or every Monday through Friday at a preset time.

  NOTE: *This feature does not work if the system is shut off using a power strip or surge protector.*

- Common Information Model (CIM) support — allows access to system management information for systems running Microsoft Windows 98 or any other Windows operating system that includes the Web-Based Enterprise Management (WBEM) core components. For information about WBEM core components, see the Microsoft website at **www.microsoft.com**.
- Configuration change alerts — generate warning messages if a local or remote system has a change in hardware configuration.
- Asset info with support for the cost of ownership (COO) MIF Standard — allows recording and tracking of system costs and stores the information in the **coo.mif** file.
- Remote basic input/output system (BIOS) flash — allows remote BIOS upgrades to systems on a network.
- Remote system configuration — allows changes to the system asset tag, boot sequence, property ownership tag, and system setup program options.
- Prefailure alerts — generate warning messages about potential failures by SMART II hard drives.

Security

The computer provides the following methods of physically securing the chassis:

- Chassis intrusion detection
- Security cable slot and padlock ring

Chassis Intrusion Detection

The chassis intrusion monitor can detect when the chassis is opened. The **Chassis Intrusion** option in system setup displays the status of the monitor.

1. Enter system setup.
2. Press the down-arrow keys to move to the **System Security** option.
3. Press <Enter> to access the **System Security** option's pop-up menu.
4. Press the down-arrow keys to move to the **Chassis Intrusion** option.
5. Press the spacebar to select an option setting.

Option settings:

- **Enabled** — When the computer cover is opened with this setting, a DMI event is generated, the setting changes to **Detected**, and the following message appears during the boot routine at the next system start-up:

  ```
  Alert! Cover was previously removed.
  ```

  To reset the **Detected** setting, enter system setup during the system's power-on self-test (POST). In the **Chassis Intrusion** option, press the left- or right-arrow key to select **Reset**, and then choose **Enabled**, **Enabled-Silent**, or **Disabled**.

- **Enabled-Silent (default)** — When the computer cover is opened with this setting, a DMI event is generated and the setting changes to **Detected**, but the alert message does not appear during the boot sequence at the next system start-up.
- **Disabled** — No intrusion monitoring occurs and no messages appear.

  NOTE: *When the setup password is enabled, you must know the setup password before you can reset the* ***Chassis Intrusion*** *option.*

Security Cable Slot and Padlock Ring

This ring is used to attach commercially available antitheft devices. To prevent unauthorized removal of your computer, loop the galvanized security cable around an immovable object, insert the attached locking device into the security cable slot on the back of your computer, and lock the device with the key provided.

NOTE: *Before your purchase an antitheft device, make sure it works with the cable slot on your computer.*

Password Protection

The computer provides two types of password protection:

- System password
- Setup password

System Password

System passwords allow only those who know the password to have full use of the system. Your Dell system does not have the system password feature enabled when you receive it.

NOTICE: Although passwords provide security for the data on your system, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs.

NOTICE: If you leave your system running and unattended without having a system password assigned, or if you leave your computer unlocked so that someone can disable the password by changing a jumper setting, anyone can access the data stored on your hard drive.

System Password settings in system setup:

- **Enabled** — a system password is assigned
- **Disabled —** system password feature is disabled by a jumper setting on the system board

  NOTE: You cannot change or enter a new system password if either of these options is displayed.

- **Not Enabled** — no system password is assigned and the password jumper on the system board is in the enabled position (its default setting)

  *NOTE: You can only assign a system password when **System Password** is set to **Not Enabled**.*

Assigning a System Password

1. Verify that **Password Status** is set to **Unlocked**.
2. Highlight **System Password** and then press the left- or right-arrow key.

   The option heading changes to **Enter Password**, followed by an empty 32-character field in square brackets.

3. Type your new system password.

   You can use up to 32 characters.

   As you press each character key (or the spacebar for a blank space), a placeholder appears in the field. The password assignment operation recognizes keys by their location on the keyboard, without distinguishing between lowercase and uppercase characters. For example, if you have an *M* in your password, the system recognizes either *M* or *m* as correct.

   Certain key combinations are not valid. If you enter one of these combinations, the speaker emits a beep.

   To erase a character when entering your password, press <Backspace> or the left-arrow key.

NOTE: To escape from the field without assigning a system password, press <Tab> or the <Shift><Tab> combination to move to another field, or press <Esc> at any time prior to completing step 5.

4. Press <Enter>.

   If the new system password is less than 32 characters, the whole field fills with placeholders. Then the option heading changes to **Verify Password**, followed by another empty 32-character field in square brackets.

5. To confirm your password, type it a second time and press <Enter>.

   The password setting changes to **Enabled**. Your system password is now set; you can exit system setup and begin using your system. Password protection takes effect when you reboot the system by pressing the reset button or by turning the system off and then on again.

Using Your System Password

When you turn on your system or press the reset button, or when you reboot the system by pressing the <Ctrl><Alt><Del> combination, the

following prompt appears on the screen when **Password Status** is set to **Unlocked**:

```
Type in the password and
- press <ENTER> to leave password security enabled.
- press <CTRL><ENTER> to disable password security.
Enter password:
```

If **Password Status** is set to **Locked**, the following prompt appears:

```
Type the password and press <Enter>.
```

NOTE: If you have assigned a setup password, the system accepts your setup password as an alternate system password.

If you enter a wrong or incomplete system password, the following message appears on the screen:

```
** Incorrect password. **
Enter password:
```

If you again enter an incorrect or incomplete system password, the same message appears on the screen. The third and subsequent times you enter an incorrect or incomplete system password, the system displays the following message:

```
** Incorrect password. **
Number of unsuccessful password attempts: 3
System halted! Must power down.
```

Even after your system is turned off and on, the previous message is displayed each time an incorrect or incomplete system password is entered.

*NOTE: You can use **Password Status** in conjunction with **System Password** and **Setup Password** to further protect your system from unauthorized changes.*

Deleting or Changing an Existing System Password

To delete or change an existing system password, perform the following steps:

1. Enter system setup program, and verify that **Password Status** is set to **Unlocked**.

2. Reboot your system to force it to prompt you for a system password.

3. When prompted, type the system password.

4. Press <Ctrl><Enter> to disable the existing system password, instead of pressing <Enter> to continue with the normal operation of your system.

5. Confirm that **Not Enabled** is displayed for the **System Password** option.

   If **Not Enabled** appears in the **System Password** option, the system password has been deleted. If you want to assign a new password, continue to step 6. If **Not Enabled** is not displayed for the **System Password** option, press <Alt><B> to reboot the system, and then repeat steps 3 through 5.

6. To assign a new password, follow the procedure in "Assigning a System Password."

Setup Password

Setup passwords allow only those who know the password to have full use of system setup. Your Dell system does not have the setup password feature enabled when you receive it.

Setup Password options in system setup:

- **Enabled** — does not allow assignment of setup passwords; users must enter a setup password to make changes to system setup

- **Not Enabled** — allows assignment of setup passwords; password feature is enabled but no password is assigned

Assigning a Setup Password

1. Enter system setup, and verify that **Setup Password** is set to **Not Enabled.**

2. **Highlight Setup Password** and press the left- or right-arrow key.

   The system prompts you to enter and verify the password. If a character is illegal for password use, the system emits a beep.

3. Type in and then verify the password.

   After you verify the password, the **Setup Password** setting changes to **Enabled**. The next time you attempt to enter system setup, the system prompts you for the setup password.

NOTES: The setup password can be the same as the system password.

If the two passwords are different, the setup password can be used as an alternate system password. However, the system password cannot be used in place of the setup password.

A change to **Setup Password** becomes effective immediately (rebooting the system is not required).

Operating Your System With a Setup Password Enabled

When you start system setup, the **Setup Password** option is highlighted, prompting you to type the password.

If you do not enter the correct password, the system lets you view, but not modify, system setup options.

*NOTE: You can use **Password Status** in conjunction with **Setup Password** to protect the system password from unauthorized changes.*

Deleting or Changing an Existing Setup Password

To change an existing setup password, you must know the setup password.

1. Enter system setup.
2. If you have already assigned a setup password, type it at the prompt.
3. Highlight **Setup Password** and press the left- or right-arrow key to delete the existing setup password.

   The setting changes to **Not Enabled**.

4. If you want to assign a new setup password, perform the steps in "Assigning a Setup Password."

Disabling a Forgotten Password

NOTICE: This process erases both the system and setup passwords.

CAUTION: Before you open the computer cover, see "Safety First—For You and Your Computer."

1. Open the computer cover.
2. Remove the jumper plug from the PSWD jumper to disable the password feature.

   See "Jumper Settings" to locate the password jumper (labeled "PSWD") on the system board.

3. Close the computer cover.
4. Reconnect your computer and peripherals to an electrical outlet, and then turn them on.

   This erases the existing password(s).

5. Enter the system setup program and verify that the password is disabled. Proceed to step 6 if you want to assign a new password.

   NOTE: Before you assign a new system and/or setup password, you must replace the PSWD jumper plug to reenable the password feature.

   CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."

6. Open the computer cover.
7. Replace the PSWD jumper plug.
8. Close the computer cover and reconnect the computer and peripherals to an electrical outlet and turn them on.

   Booting your system with the PSWD jumper installed reenables the password feature. When you enter system setup, both password options appear as **Not Enabled**, meaning that the password feature is enabled but that no password is assigned.

9. Assign a new system and/or setup password.

System Settings

Each time you start your computer, it compares the installed hardware with the system configuration information stored in nonvolatile random-access memory (NVRAM). If the system detects a discrepancy, it generates an error messages for each incorrect configuration setting.

You can use system settings as follows:

- To set user-selectable options such as date and time, or system password
- To set the current configuration information such as the amount of memory or type of hard drive installed

You can view the current settings at any time. Dell recommends that you print the system setup screens (by pressing <Print Screen>) or record the information for future reference.

Before you use system setup, you need to know the kind of diskette drive(s) and hard drive(s) installed in your computer. If you are unsure of this information, see the Manufacturing Test Report that was shipped with your system and is located in the **Dell Accessories** folder.

Entering System Setup

1. Turn on your system.
2. If your system is already on, shut it down and then turn it on again.
3. When `Press <F2> to Enter Setup` appears in the upper-right corner of the screen, press <F2>.

   If you wait too long and your operating system begins to load into memory, *let the system complete the load operation*; then shut down the system and try again.

NOTE: To ensure an orderly system shutdown, consult the documentation that accompanied your operating system.

System Setup Screens

The system setup screens display the current configuration information for your computer. Information on the screen is organized into four areas:

- Title — the box at the top of all screens lists the computer system name.
- Computer data — two boxes below the title box that display your system processor, level 2 (L2) cache, service tag, and the version number of the basic input/output system (BIOS).
- Options — a scrollable box listing options that define the configuration of your computer, including installed hardware, power conservation, and security features.

  Fields to the right of the option titles contain settings or values. Those you can change appear bright on the screen. Those you cannot change (because they are set by the computer) appear less bright. When <Enter> appears to the right of an option title, press <Enter> to access a pop-up menu of additional options.
- Key functions — a line of boxes across the bottom of all screens that lists keys and their functions within system setup.
- Help — press <F1> for information in the currently highlighted option.

System Setup Navigation Keys

The following table lists the keys you use to view or change information on the **system setup** screen and to exit the program.

Keys	Action
Tab or ↓	Moves to the next field.
Shift Tab or ↑	Moves to the previous field.
← or →	Cycles through the options in a field. In many fields, you can also type the appropriate value.
Page Down or Page Up	Scrolls through help information.
Enter	Enters the selected field's pop-up options menu.
spacebar or + or -	In the selected field's pop-up options menu, cycles through the options in a field.
Alt X	Exits system setup without rebooting the system and returns the system to its previous state—the boot

	routine.*
Alt B	Exits system setup and reboots the system, implementing any changes you have made.
Alt D	Resets the selected option to its default setting.

**NOTE: For most of the options, any changes you make are recorded but do not take effect until the next time you boot the system. For a few options (as noted in the help area), the changes take effect immediately.*

Changing the Boot Sequence

The boot sequence allows you to specify the order of the devices from which the system will attempt to boot.

1. Press <Enter> to access the **Boot Sequence** option's pop-up menu.

NOTE: Write down your current boot sequence in case you want to restore it.

2. Press the up- and down-arrow keys to move through the list of devices.
3. Press the spacebar to enable or disable a device (enabled devices appear with a check mark).
4. Press plus (+) or minus (–) to move a selected device up or down the list.

Option settings:

- **Diskette Drive A: —** The system will attempt to boot from the diskette drive. If the system finds a diskette in the drive that is not bootable, an error message will appear. If no diskette is in the drive, the system will attempt to boot from the next device in the list.
- **Hard Drive** — The system will attempt to boot from the primary hard drive. If the system does not find an operating system on the drive, it will attempt to boot from the next device in the list.
- **CD-ROM Device** — The system will attempt to boot from the CD drive. If the system does not find a CD in the drive or if there is not an operating system on the CD, the system will attempt to boot from the next device in the list.
- **MBA (Onboard NIC) —** Selecting **MBA UNDI** allows the system to boot from the network server. The **MBA UNDI** option appears under **Boot Sequence** only if the **Network Interface Controller** option is set to **On w/MBA**. If the **Network Interface Controller** option is set to **On** or **Off**, set it to **On w/MBA** and then press <Alt><b> to save the change and reboot the system. **MBA UNDI** then appears under **Boot Sequence**.

  When you select this option, the system prompts you to press <Ctrl><Alt><b> at the Dell logo screen during system boot. A menu then appears that allows you to select **PXE**, **RPL**, **BootP**, or **NetWare** as the active boot mode. If a boot routine is not available from the network server, the system tries to boot from the next device in the boot sequence list.

Additional System Setup Options

- **AC Power Recovery** determines what happens when AC power is restored to the system.

  When **Off** is selected, the system remains off when AC power is restored. When **On** is selected, the system starts up when AC power is restored.

  When **Last** is selected, the system returns to the AC power state existing at the time that AC power was lost. If the system is on when AC power is lost, the system starts up when AC power is restored. If the system is off when AC power is lost, the system remains off when AC power is restored.
- **Asset Tag** displays the customer-programmable asset tag number for the system if an asset tag number is assigned. You can use the Asset Tag utility, which is included with your software support utilities, to enter an asset tag number up to ten characters long into nonvolatile random-access memory (NVRAM).
- **Auto Power On** allows you to set the time and days of the week to turn on the computer system automatically. You can set **Auto Power On** to turn on the system either every day or every Monday through Friday.

  NOTE: This feature does not work if you turn off your system using a power strip or surge protector.

  Time is kept in a 24-hour format (*hours:minutes*). To change the start-up time, press the right-arrow key to increase the number in the highlighted field or press the left-arrow key to decrease the number. If you prefer, you can type numbers in both the date and time fields.

  The default for **Auto Power On** is **Disabled**.
- **CPU ID** provides the manufacturer's identification code for the installed microprocessor.

- **CPU Information**
  - **CPU Speed** indicates the processor speed at which your system boots.

    Press the left- or right-arrow key to toggle the **CPU Speed** option between the resident microprocessor's rated speed (the default) and a lower compatibility speed, which lets you accommodate speed-sensitive application programs. A change to this option takes effect immediately (rebooting the system is not required).

    To toggle between the rated processor speed and the compatibility speed while the system is running in real mode, press <Ctrl><Alt><\>. (For keyboards that do not use American English, press <Ctrl><Alt><#>.)
  - **Bus Speed** indicates the speed of the microprocessor's system bus, or front-side bus (FSB).
  - **Processor ID** provides the manufacturer's identification code(s) for the installed microprocessor.
  - **Clock Speed** indicates the core speed at which the microprocessor(s) operates.
  - **Cache Size** displays the size of the microprocessor's level 2 (L2) cache.
- **Diskette Drive A and Diskette Drive B** identify the type of diskette drives installed in your computer. With the standard cabling configuration, **Diskette Drive A** (the boot diskette drive) is the diskette drive installed in the top externally accessible drive bay; **Diskette Drive B** is a second diskette drive installed in any of the lower externally accessible drive bays.

  The **Diskette Drive A** and **Diskette Drive B** options have the following possible settings:
  - **Optical, 360 KB**
  - **Optical, 1.2 MB**
  - **Diskette, 720 KB**
  - **Diskette, 1.44 MB**
  - **Not Installed**
- **Fastboot** allows your system to boot in 10 seconds or less. The default setting is **On**. If you do not want your computer to skip certain configurations and tests during boot, you may set this option to **Off**.
- **Integrated Devices.** This option configures the following devices integrated with the system board:

  Press <Enter> to configure these options as explained in the following subsections.
  - **Sound** determines whether the integrated audio controller is **On** or **Off**. The default is **On**.
  - **Network Interface Controller** determines whether the integrated NIC is **On**, **Off**, or **On w/ MBA**. The default is **On**. If you select **On w/ MBA**, you are prompted to press <Ctrl><Alt><b> at the Dell logo screen during system boot. A menu then appears that allows you to select **PXE**, **RPL**, **BootP**, or **NetWare** as the active boot mode.
  - **Mouse Port** enables or disables the system's integrated Personal System/2 (PS/2)-compatible mouse port. Disabling the mouse allows an expansion card to use interrupt request (IRQ)12.
  - **Serial Port 1 and Serial Port 2** configure the system's integrated serial ports. You can set these options to **Auto** (the default) to automatically configure a port, to a particular designation (**COM1** or **COM3** for **Serial Port 1**; **COM2** or **COM4** for **Serial Port 2**), or to **Off** to disable the port.

    If you set a serial port to **Auto** and add an expansion card containing a port configured to the same designation, the system automatically remaps the integrated port to the next available port designation that shares the same IRQ setting as follows:

    - COM1 (input/output [I/O] address 3F8h), which shares IRQ4 with **COM3**, is remapped to **COM3** (I/O address 3E8h).

    - COM2 (I/O address 2F8h), which shares IRQ3 with **COM4**, is remapped to **COM4** (I/O address 2E8h).

    *NOTE: When two COM ports share an IRQ setting, you can use either port as necessary, but you may not be able to use them b the same time. If you are running the Microsoft® Windows® 95 or IBM® OS/2® operating system, you cannot use both serial p the same time. If the second port (**COM3** or **COM4**) is also in use, the integrated port is turned off.*
  - **Parallel Port** configures the system's integrated parallel port. Press <Enter> to configure the **Parallel Port** options explained in the following subsections.

    Mode: You can set this option to **PS/2**, **EPP**, **ECP**, **AT**, or **Off** to disable the port. Set this option according to the type of peripheral device connected to the parallel port. To determine the correct mode to use, see the

documentation that came with the device.

I/O Address: This option determines the I/O address used by the parallel port and appears except when **Mode** is set to **Off**. You can set **I/O Address** to **378h** (the default), **278h**, or **3BCh**.

*NOTE: You cannot set the parallel port to **3BCh** if **Mode** is set to **EPP**.*

DMA Channel: This option determines the direct memory access (DMA) channel used by the parallel port and appears only when **Mode** is set to **ECP**. The available options are **DMA 1**, **DMA 3**, and **Off**.

- **IDE Drive Interface**: enables or disables the system's integrated enhanced integrated drive electronics (EIDE) hard drive interface. With **Auto** (the default) selected, the system turns off the integrated EIDE interface when necessary to accommodate a controller card installed in an expansion slot. As part of the boot routine, the system first checks for a primary hard drive controller card installed in an expansion slot. If no card is found, the system enables the integrated EIDE interface to use IRQ14 and IRQ15. If a primary controller is detected on the expansion bus, the integrated EIDE interface is disabled. Selecting **Off** disables the integrated EIDE interface.

- **Diskette Interface**: controls the operation of the system's integrated diskette drive controller. With **Auto** (the default) selected, the system turns off the integrated diskette drive controller when necessary to accommodate a controller card installed in an expansion slot.

  With **Read Only** selected, nothing can be written to any diskette drive using the system's integrated diskette drive controller. (The system can still read from the drives.) When **Read Only** is selected, **Auto** is also in effect, meaning that the system turns off the integrated diskette drive controller as necessary.

  Selecting **Off** turns off the integrated diskette drive controller; this setting is used primarily for troubleshooting purposes.

- **USB Emulation**: determines whether the system's basic input/output system (BIOS) controls Universal Serial Bus (USB) keyboards and mice. When **On** is selected (the default), the BIOS controls USB keyboards and mice until a USB driver is loaded by the operating system. When **Off** is selected, the BIOS does not control USB keyboards and mice, although they function during the boot routine. Set **USB Emulation** to **Off** if you are using a PS/2-compatible keyboard and mouse.

- **Primary Video Controller**: determines which video controller to use when the system boots. When **Auto** is selected, the system uses a video expansion card, if one is installed or the onboard video controller if a video expansion card is not installed. When **Onboard** is selected, the system uses the onboard video controller even if a video expansion card is installed.

- **Video DAC Snoop**: lets you correct video problems that may occur when you use certain video expansion cards. The default is **Off**. If you are using a video expansion card and problems such as incorrect colors or blank windows occur, set **Video DAC Snoop** to **On**.

- **Keyboard NumLock** determines whether your system boots with the Num Lock mode activated on 101- or 102-key keyboards (it does not apply to 84-key keyboards). When Num Lock mode is activated, the rightmost bank of keys on your keyboard provides the mathematical and numeric functions shown at the top of each key. When Num Lock mode is turned off, these keys provide cursor-control functions shown by the label on the bottom of each key.

- **Memory Information** indicates the amount of installed memory detected in your system, the system memory speed, the amount of video memory, and the size of the display cache. After you add memory, check this option to confirm that the new memory is installed correctly and is recognized by the system.

- **PCI IRQ Assignment** specifies which IRQ lines are assigned to the Peripheral Component Interconnect (PCI) devices installed in the computer. Press <Enter> to configure these devices. Then select the device whose IRQ line you want to change, and press the plus (+) or minus (–) key to scroll through the available IRQ lines. Normally you do not need to change the IRQ lines assigned to PCI devices unless a particular device, device driver, or operating system requires a specific IRQ line already in use by a PCI device.

- **Primary Drive *n* and Secondary Drive *n***

  Primary Drive *n* identifies drives attached to the primary EIDE interface connector (labeled "IDE1") on the system board; **Secondary Drive *n*** identifies drives connected to the secondary EIDE interface connector (labeled "IDE2"). Use the secondary EIDE interface connector for EIDE CD-ROM drives.

  *NOTES: For all devices obtained from Dell that use the integrated EIDE controller, set the appropriate **Drive** option to **Auto**.*

  You must have an EIDE device connected to the primary EIDE interface if you have an EIDE device connected to the secondary EID interface.

  The following settings identify the type of EIDE devices installed in the computer:

  - **Auto** (use this setting for all EIDE devices from Dell)
  - **Off**
  - **User 1** or **User 2**

- A specific drive-type number

To choose a setting for each option, press <Enter> to access the field's pop-up settings menu. Then type characters from the keyboard or press the left- or right-arrow key to cycle through the settings.

A *drive-type number* specifies the parameters of a hard drive, based on a table recorded in the system's basic input/output system (BIOS).

NOTE: Operating systems that bypass the system BIOS may not obtain optimum hard drive performance.

If You Have a Problem

If the system generates a drive error message the first time you boot your system after you install an EIDE drive, it may mean that your particular drive does not work with the automatic drive-type detect feature. If you suspect that your problem is related to drive type, try entering your drive-type information in one of the following ways:

- **If you know the drive-type number**

  Use the drive-type number found in the documentation that came with the drive, or if the drive was installed by Dell when you purchased your system, access the Manufacturing Test Report from the **Dell Accessories** folder.

  To set the drive-type number in system setup, highlight the appropriate drive option (**Primary Drive 0** or **Primary Drive 1**) and type the correct drive-type number. If you prefer, you can press the right- or left-arrow key to increase or decrease, respectively, the drive-type number until the correct one is displayed.

- **If you do not know the drive-type number**

  The **Drive 0** and **Drive 1** options display the following parameters for each drive:

  - Drive Type is the drive-type number for the selected hard drive.

  - Capacity (automatically calculated by the system) indicates the number of millions of bytes of storage provided by the drive.

  - Cylinders is the number of logical cylinders.

  - Heads indicates the number of logical heads in the drive.

  - Sectors indicates the number of logical sectors per track.

If none of the supported drive types match the parameters of your new drive, you can enter your own parameters. To do so, highlight the **Drive 0** option and type u to display **User 1**. You can then press the right- or left-arrow key to switch between the **User 1** and **User 2** settings (only two user-defined drive types are allowed). Then press the <Tab> key to highlight each of the parameter fields in succession, and enter the appropriate number for each field.

*NOTE: You can use the **User 1** and **User 2** drive types for both the **Primary** and **Secondary Drive 0** and **Drive 1** options. However, i you select the **User 1** or **User 2** drive type, you may not obtain optimum hard drive performance. Also, you cannot use the **User 1** an **User 2** drive types for hard drives with a storage capacity that is greater than 528 megabytes (MB).*

- **Remote Wake Up** allows you to set the Remote Wake Up feature to **On** or **Off**. You must reboot your system before a change takes effect.

- **Report Keyboard Errors** enables or disables reporting of keyboard errors during the power-on self-test (POST), which is a series of tests that the system performs on the hardware each time you turn on the system or press the reset button.

  This option is useful when applied to self-starting servers or host systems that have no permanently attached keyboard. In these situations, selecting **Do Not Report** suppresses all error messages relating to the keyboard or to the keyboard controller during POST. This setting does not affect the operation of the keyboard itself if a keyboard is attached to the computer.

- **System Data** The following information about the system is displayed in the system data area of the system setup screen:

  - The microprocessor type and BIOS level.

  - The size of the integrated level 2 (L2) cache.

  - The system's five-character service tag number, which was programmed into NVRAM by Dell during the manufacturing process. Refer to this number during technical assistance or service calls. The service tag number is also accessed by certain Dell support software, including the diagnostics software.

- **System Date** resets the date on the computer's internal calendar.

  Your system automatically displays the day of the week corresponding to the settings in the **month**, **day-of-month**, and **year** fields.

  To change the date, press the left- or right-arrow key to select a field, and then press plus (+) or minus (–) to increase or decrease the

number. If you prefer, you can type numbers in the **month**, **day-of-month**, and **year** fields.

- **CPU Serial Number** determines whether the microprocessor serial number (if any) is provided to programs that request it. When **Enabled** is selected, the system provides the microprocessor serial number to programs that request it. When **Disabled** is selected, the system never provides the microprocessor serial number.

- **System Time** resets the time on the computer's internal clock.

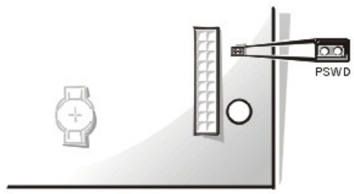
  Time is kept in a 24-hour format (*hours:minutes:seconds*). To change the time, press the left- or right-arrow key to select a field, and then press plus (+) or minus (–) to increase or decrease the number. If you prefer, you can type numbers in each of the fields.

- **ZIP Floppy Support** enables or disables the support of Advanced Technology Attachment Packet Interface (ATAPI) Zip devices by the system BIOS. When **Enabled** is selected, ATAPI Zip devices are supported as diskette drives, and the first Zip device is listed as a bootable device under **Boot Sequence**. When **Disabled** is selected, the system BIOS ignores ATAPI Zip devices, although the operating system may still support them.

Jumper Settings

The following figure shows the jumper on the system board.

System Board Jumper



NOTICE: Make sure that your system is turned off and unplugged before you change the jumper setting. Otherwise, damage to your system or unpredictable results may occur.

To change the jumper setting to disabled, pull the plug off its pins. To reenable the setting, carefully fit the plug onto the pins indicated.

System-Board Jumper Settings

Jumper	Setting	Description
PSWD	(default)	System password features are enabled.
		System password features are disabled.
jumpered unjumpered		

Software Installation and Configuration

When you obtain software, check it for viruses with virus-scanning software before installing it on your computer's hard drive. Viruses, which are pieces of code that can replicate themselves, can quickly use all available system memory, damage or destroy data stored on the hard drive, and permanently affect the performance of the programs they infect. Several commercial virus-scanning programs are available for purchase, and most bulletin board services (BBSs) archive freely distributed virus-scanning programs that you can download with a modem.

Before you install a program, read its documentation to learn how the program works, what hardware it requires, and what its defaults are. A program usually includes installation instructions in its accompanying documentation and a software installation routine on its program diskette(s) or CD(s).

The software installation routine assists you in transferring the appropriate program files to your computer's hard drive. Installation instructions may provide details about how to configure your operating system to successfully run the program. Always read the installation instructions before running a program's installation routine. You may be instructed to modify some operating system start-up files, such as **config.sys** and **autoexec.bat**, or the installation routine may modify start-up files automatically.

When you run the installation routine, be prepared to respond to prompts for information about how your computer's operating system is configured, what type of computer you have, and what peripherals are connected to your computer.

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Contacting Dell: Dell™ OptiPlex™ GX150 System User's Guide

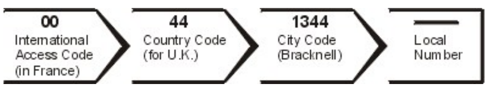
- Overview
- International Dialing Codes
- Americas Contact Numbers
- Europe Contact Numbers
- Asia and Other Regions Contact Numbers

Overview

When you need to contact Dell, use the telephone numbers, codes, and electronic addresses provided in the following sections. "International Dialing Codes" provides the various codes required to make long-distance and international calls. "Americas Contact Numbers," "Europe Contact Numbers," and "Asia and Other Regions Contact Numbers" provide local telephone numbers, area codes, toll-free numbers, and e-mail addresses, if applicable, for each department or service available in various countries around the world.

If you are making a direct-dialed call to a location outside of your local telephone service area, determine which codes to use (if any) in "International Dialing Codes," in addition to the local numbers provided in the other sections.

For example, to place an international call from Paris, France, to Bracknell, England, dial the international access code for France followed by the country code for the U.K., the city code for Bracknell, and then the local number as shown in the following illustration:



To place a long-distance call within your own country, use area codes instead of international access codes, country codes, and city codes. For example, to call Paris, France, from Montpellier, France, dial the area code plus the local number as shown in the following illustration:



The codes required depend on where you are calling from as well as the destination of your call; in addition, each country has a different dialing protocol. If you need assistance in determining which codes to use, contact a local or an international operator.

NOTES: Toll-free numbers are for use only within the country for which they are listed. Area codes are most often used to call long distance within your own country (not internationally)—in other words, when your call originates in the same country you are calling.

Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

International Dialing Codes

Click a listed country to obtain the appropriate contact numbers.

Country (City)	International Access Code	Country Code	City Code
Argentina (Buenos Aires)	00	54	11
Australia (Sydney)	0011	61	2
Austria (Vienna)	900	43	1
Belgium (Brussels)	00	32	2
Brazil	0021	55	51
Brunei	—	673	—
Canada (North York, Ontario)	011	—	Not required
Chile (Santiago)	—	56	2
China (Xiamen)	—	86	592
Czech Republic (Prague)	00	420	2
Denmark (Horsholm)	00	45	Not required
Finland (Helsinki)	990	358	9

France (Paris) (Montpellier)	00	33	(1) (4)
Germany (Langen)	00	49	6103
Hong Kong	001	852	Not required
Ireland (Cherrywood)	16	353	1
Italy (Milan)	00	39	02
Japan (Kawasaki)	001	81	44
Korea (Seoul)	001	82	2
Luxembourg	00	352	—
Macau	—	853	Not required
Malaysia (Penang)	00	60	4
Mexico (Colonia Granada)	00	52	Not required
Netherlands (Amsterdam)	00	31	20
New Zealand	00	64	—
Norway (Lysaker)	00	47	Not required
Poland (Warsaw)	011	48	22
Portugal	00	35	—
Singapore (Singapore)	005	65	Not required
South Africa (Johannesburg)	09/091	27	11
Spain (Madrid)	00	34	91
Sweden (Upplands Vasby)	00	46	8
Switzerland (Geneva)	00	41	22
Taiwan	002	886	—
Thailand	001	66	—
U.K. (Bracknell)	010	44	1344
U.S.A. (Austin, Texas)	011	1	Not required

Americas Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Antigua and Barbuda	General Support		1-800-805-5924
Argentina (Buenos Aires)	Technical Support, Customer Care		toll free: 0800 444 0733
	Sales		toll free: 0810 444 3355
	Tech Support Fax	11	4515-7139
	Customer Care Fax	11	4515-7139
	Website: **www.dell.com.ar**		
Barbados	General Support		1-800-534-3066
Bermuda	General Support		1-800-342-0671
Brazil	Customer Support, Technical Support		toll free: 0800 90 3355
	Technical Support Fax	51	481-5470
	Customer Care Fax	51	481-5480

	Sales		toll free: 0800 90 3390
	Website: **www.dell.com/br**		
Canada (North York, Ontario)	Automated Order-Status System		toll free: 1-800-433-9014
	AutoTech (Automated technical support)		toll free: 1-800-247-9362
	Customer Care (From outside Toronto)		toll free: 1-800-387-5759
	Customer Care (From within Toronto)	416	758-2400
	Customer Technical Support		toll free: 1-800-847-4096
	Sales (Direct sales—from outside Toronto)		toll free: 1-800-387-5752
	Sales (Direct sales—from within Toronto)	416	758-2200
	Sales (Federal government, education, and medical)		toll free: 1-800-567-7542
	Sales (Major accounts)		toll free: 1-800-387-5755
	TechFax		toll free: 1-800-950-1329
Cayman Islands	General Support		1-800-805-7541
Chile (Santiago) *NOTE: Customers in Chile call the U.S.A. for sales, customer, and technical assistance*	Sales, Customer Support, and Technical Support		toll free: 1230-020-4823
Colombia	General Support		980-9-15-3978
Costa Rica	General Support		800-012-0435
Dominican Republic	General Support		1-800-148-0530
El Salvador	General Support		01-889-753-0777
Guatemala	General Support		1-800-999-0136
Jamaica	General Support (dial from within Jamaica only)		1-800-682-3639
Latin America *NOTE: Customers in Latin America call the U.S.A. for sales, customer, and technical assistance.*	Customer Technical Support (Austin, Texas, U.S.A.)	512	728-4093
	Customer Service (Austin, Texas, U.S.A.)	512	728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512	728-3883
	Sales (Austin, Texas, U.S.A.)	512	728-4397

	SalesFax (Austin, Texas, U.S.A.)	512	728-4600 728-3772
Mexico	Customer Technical Support		001-877-384-8979 or 001-877-269-3383
	Sales		50-81-8800 or 01-800-888-3355
	Customer Service		001-877-384-8979 or 001-877-269-3383
	Main		50-81-8800 or 01-800-888-3355
Netherlands Antilles	General Support		001-800-882-15194
Nicaragua	General Support		001-800-220-1006
Panama	General Support		001-800-507-0962
Peru	General Support		0800-50-669
Puerto Rico	General Support		800-805-7545
St. Lucia	General Support		1-800-882-1521
Trinidad and Tobago	General Support		1-800-805-8035
U.S.A. (Austin, Texas)	Automated Order-Status System		toll free: 1-800-433-9014
	AutoTech (For portable and desktop computers)		toll free: 1-800-247-9362
	Dell Home and Small Business Group (For portable and desktop computers):		
	Customer Technical Support (Return Material Authorization Numbers)		toll free: 1-800-624-9896
	Customer Technical Support (Home sales purchased via **www.dell.com**)		toll free: 1-877-576-3355
	Customer Service (Credit Return Authorization Numbers)		toll free: 1-800-624-9897
	National Accounts (Systems purchased by established Dell national accounts [have your account number handy] or value-added resellers [VARs]):		
	Customer Service and Technical Support (Return Material Authorization Numbers)		toll free: 1-800-822-8965
	Public Americas (Systems purchased by governmental agencies [local, state, or federal], medical institutions, or educational institutions):		

	Customer Service and Technical Support (Return Material Authorization Numbers)		toll free: 1-800-234-1490
	Dell Sales		toll free: 1-800-289-3355 toll free: 1-800-879-3355
	Spare Parts Sales		toll free: 1-800-357-3355
	Desktop and Portable Fee-Based Technical Support		toll free: 1-800-433-9005
	Sales (Catalogs)		toll free: 1-800-426-5150
	Fax		toll free: 1-800-727-8320
	TechFax		toll free: 1-800-950-1329
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired		toll free: 1-877-DELLTTY (1-877-335-5889)
	Switchboard	512	338-4400
	DellNet™		1-877-dellnet (1-877-335-5638)
U.S. Virgin Islands	General Support		1-877-673-3355
Venezuela	General Support		8001-3605

Europe Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Austria (Vienna) *NOTE: Customers in Austria call Langen, Germany for Technical Support and Customer Care.*	Switchboard	01	491 040
	Home/Small Business Sales	01	795676-02
	Home/Small Business Sales Fax	01	795676-05
	Home/Small Business Customer Care	01	795676-03
	Preferred Accounts/Corporate Customer Care		0660-8056
	Home/Small Business Technical Support	01	795676-04
	Preferred Accounts/Corporate Technical Support		0660-8779
	Website: **support.euro.dell.com**		
	E-mail: tech_support_central_europe@dell.com		
Belgium (Brussels)	Technical Support	02	481 92 88
	Customer Care	02	481 91 19
	Home/Small Business Sales		toll free: 0800 16884
	Corporate Sales	02	481 91 00
	Fax	02	481 92 99
	Switchboard	02	481 91 00
	Website: **support.euro.dell.com**		
	E-mail: tech_be@dell.com		

	E-mail for French Speaking Customers: support.euro.dell.com/be/fr/emaildell/		
Czech Republic (Prague)	Technical Support	02	22 83 27 27
	Customer Care	02	22 83 27 11
	Fax	02	22 83 27 14
	TechFax	02	22 83 27 28
	Switchboard	02	22 83 27 11
	Website: **support.euro.dell.com**		
	E-mail: czech_dell@dell.com		
Denmark (Horsholm) *NOTE: Customers in Denmark call Sweden for fax technical support.*	Technical Support		45170182
	Relational Customer Care		45170184
	Home/Small Business Customer Care		32875505
	Switchboard		45170100
	Fax Technical Support (Upplands Vasby, Sweden)	46	859005594
	Fax Switchboard		45170117
	Website: **support.euro.dell.com**		
	E-mail: den_support@dell.com E-mail Support for Servers: Nordic_server_support@dell.com		
Finland (Helsinki)	Technical Support	09	253 313 60
	Technical Support Fax	09	253 313 81
	Relational Customer Care	09	253 313 38
	Home/Small Business Customer Care	09	693 791 94
	Fax	09	253 313 99
	Switchboard	09	253 313 00
	Website: **support.euro.dell.com**		
	E-mail: fin_support@dell.com		
France (Paris) (Montpellier)	**Home and Small Business**		
	Technical Support	0825	387 270
	Customer Care	0825	823 833
	Fax	0825	004 701
	Fax (Alternative)	04	99 75 40 01
	Switchboard	0825	004 700
	Switchboard (Alternative)	04	99 75 40 00
	Sales	0825	004 700
	Website: **support.euro.dell.com**		
	E-mail: support.euro.dell.com/fr/fr/emaildell/		
	Corporate		
	Technical Support	0825	004 719
	Customer Care	0825	338 339
	Fax	01	55 94 71 01
	Switchboard	01	55 94 71 00
	Sales	01	55 94 71 00
	Website: **support.euro.dell.com**		
	E-mail: support.euro.dell.com/fr/fr/emaildell/		
Germany	Technical Support	06103	766-7200

(Langen)	Home/Small Business Customer Care		0180-5-224400
	Global Segment Customer Care	06103	766-9570
	Preferred Accounts Customer Care	06103	766-9420
	Large Accounts Customer Care	06103	766-9560
	Public Accounts Customer Care	06103	766-9555
	Switchboard	06103	766-7000
	Website: **support.euro.dell.com**		
	E-mail: tech_support_central_europe@dell.com		
Ireland (Cherrywood)	Ireland Technical Support	1850	543 543
	UK Technical Support	0870	908 0800
	Ireland Home User Customer Care	01	204 4095
	Ireland Small Business Customer Care	01	204 4444
	Ireland Corporate Customer Care	01	204 4003
	UK Customer Care	0870	906 0010
	Ireland Sales	01	204 4444
	UK Sales	0870	907 4000
	SalesFax	01	204 0144
	Ireland Fax	01	204 5960
	Switchboard	01	204 4444
	Website: **support.euro.dell.com**		
	E-mail: dell_direct_support@dell.com		
Italy (Milan)	**Home and Small Business**		
	Technical Support	02	577 826 90
	Customer Care	02	696 821 14
	Fax	02	696 821 13
	Switchboard	02	696 821 11
	Website: **support.euro.dell.com**		
	E-mail: support.euro.dell.com/it/it/emaildell/		
	Corporate		
	Technical Support	02	577 826 90
	Customer Care	02	577 825 55
	Fax	02	035 30
	Switchboard	02	577 821
	Website: **support.euro.dell.com**		
	E-mail: support.euro.dell.com/it/it/emaildell/		
Luxembourg *NOTE: Customers in Luxembourg call Belgium for sales, customer, and technical assistance.*	Technical Support (Brussels, Belgium)	02	481 92 88
	Home/Small Business Sales (Brussels, Belgium)		toll free: 080016884
	Corporate Sales (Brussels, Belgium)	02	481 91 00
	Customer Care (Brussels, Belgium)	02	481 91 19

	Switchboard (Brussels, Belgium)	02	481 91 00
	Fax (Brussels, Belgium)	02	481 92 99
	Website: **support.euro.dell.com**		
	E-mail: tech_be@dell.com		
Netherlands (Amsterdam)	Technical Support	020	581 8838
	Customer Care	020	581 8740
	Home/Small Business Sales		toll free: 0800-0663
	Home/Small Business Sales Fax	020	682 7171
	Corporate Sales	020	581 8818
	Corporate Sales Fax	020	686 8003
	Fax	020	686 8003
	Switchboard	020	581 8818
	Website: **support.euro.dell.com**		
	E-mail: tech_nl@dell.com		
Norway (Lysaker) *NOTE: Customers in Norway call Sweden for fax technical support.*	Technical Support		671 16882
	Relational Customer Care		671 17514
	Home/Small Business Customer Care		231 62298
	Switchboard		671 16800
	Fax Technical Support (Upplands Vasby, Sweden)	00	46 08 590 05 594
	Fax Switchboard		671 16865
	Website: **support.euro.dell.com**		
	E-mail: nor_support@dell.com E-mail Support for Servers: Nordic_server_support@dell.com		
Poland (Warsaw)	Customer Service Phone	22	57 95 700
	Customer Care	22	57 95 999
	Sales	22	57 95 999
	Switchboard	22	57 95 999
	Customer Service Fax	22	57 95 806
	Fax	22	57 95 998
	Website: **support.euro.dell.com**		
	E-mail: pl_support@dell.com		
Portugal	Technical Support	35	800 834 077
	Customer Care		800 300 415 or 800 834 075
	Sales		800 300 410 or 800 300 411 or 800 300 412 or 351 214 220 710
	Switchboard	34	917 229 200
	Fax	35	121 424 01 12
	E-mail: support.euro.dell.com/es/es/emaildell/		
Spain (Madrid)	**Home and Small Business**		
	Technical Support		902 100 130
	Customer Care		902 118 540
	Sales		902 118 541

	Fax		902 118 539
	Website: **support.euro.dell.com**		
	E-mail: support.euro.dell.com/es/es/emaildell/		
	Corporate		
	Technical Support		902 100 130
	Customer Care		902 118 546
	Switchboard	91	722 92 00
	Fax	91	722 95 83
	Website: **support.euro.dell.com**		
	E-mail: support.euro.dell.com/es/es/emaildell/		
Sweden (Upplands Vasby)	Technical Support	08	590 05 199
	Relational Customer Care	08	590 05 642
	Home/Small Business Customer Care	08	587 70 527
	Fax Technical Support	08	590 05 594
	Sales	08	590 05 185
	Website: **support.euro.dell.com**		
	E-mail: swe_support@dell.com E-mail Support for Latitude™ and Inspiron™: Swe-nbk_kats@dell.com E-mail Support for OptiPlex™ : Swe_kats@dell.com E-mail Support for Servers: Nordic_server_support@dell.com		
Switzerland (Geneva)	Technical Support (Home and Small Business)		0844 811 411
	Technical Support (Corporate)		0844 822 844
	Customer Care (Home and Small Business)		0848 802 202
	Customer Service (Corporate)		0848 821 721
	Switchboard	022	799 01 01
	Fax	022	799 01 90
	Website: **support.euro.dell.com**		
	E-mail for French Speaking HSB and Corporate Customers: support.euro.dell.com/ch/fr/emaildell/		
U.K. (Bracknell)	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870	908 0500
	Technical Support (Direct/PAD and general)	0870	908 0800
	Global Accounts Customer Care	01344	373 186
	Corporate Customer Care	0870	908 0500
	Preferred Accounts (500–5000 employees) Customer Care	01344	373 196
	Central Government Customer Care	01344	373 193
	Local Government Customer Care	01344	373 199
	Home/Small Business Sales	0870	907 4000
	Home/Small Business Customer Care	0870	906 0010
	Corporate/Public Sector Sales	01344	860 456
	Website: **support.euro.dell.com**		

	E-mail: dell_direct_support@dell.com		

Asia and Other Regions Contact Numbers

Country (City)	Department Name or Service	Area Code	Local Number or Toll-Free Number
Australia (Sydney)	Home and Small Business		1-300-65-55-33
	Government and Business		toll free: 1-800-633-559
	Preferred Accounts Division (PAD)		toll free: 1-800-060-889
	Customer Care		toll free: 1-800-819-339
	Corporate Sales		toll free: 1-800-808-385
	Transaction Sales		toll free: 1-800-808-312
	Fax		toll free: 1-800-818-341
Brunei *NOTE: Customers in Brunei call Malaysia for customer assistance.*	Customer Technical Support (Penang, Malaysia)		633 4966
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales (Penang, Malaysia)		633 4955
China (Xiamen)	Home and Small Business Technical Support		toll free: 800 858 2437
	Corporate Accounts Technical Support		toll free: 800 858 2333
	Customer Experience		toll free: 800 858 2060
	Home and Small Business		toll free: 800 858 2222
	Preferred Accounts Division		toll free: 800 858 2062
	Large Corporate Accounts North		toll free: 800 858 2999
	Large Corporate Accounts East		toll free: 800 858 2020
	Large Corporate Accounts South		toll free: 800 858 2355
	Large Corporate Accounts GCP		toll free: 800 858 2055
	Large Corporate Accounts HK		toll free: 800 964108
	Large Corporate Accounts GCP HK		toll free: 800 907308
Hong Kong *NOTE: Customers in Hong Kong call Malaysia for customer assistance.*	Technical Support		toll free: 800 96 4107
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales		toll free: 800 96 4109
	Corporate Sales		toll free: 800 96 4108
India	Technical Support		1600-33-8045
	Sales		1600-33-8044
Japan (Kawasaki)	Technical Support (Server)		toll free: 0120-1984-35
	Technical Support Outside of Japan (Server)	81-44	556-4152
	Technical Support (Dimension™ and Inspiron) Technical Support Outside of Japan (Dimension and Inspiron)	 81-44	toll free: 0120-1982-26 520-1435
	Technical Support (Dell Precision™, OptiPlex, and Latitude) Technical Support Outside of Japan (Dell Precision, OptiPlex, and Latitude)	81-44	toll free: 0120-1984-33 556-3894
	Customer Care	044	556-4240
	24-Hour Automated Order Status Service	044	556-3801
	Individual User	044	556-1657
	Business Sales Division (Up to 400 employees)	044	556-3494
	Public Sales (Government agencies, education	044	556-3440

	institutions, and medical institutions)		
	Preferred Accounts Division Sales (Over 400 employees)	044	556-3433
	Global Segment Japan	044	556-3469
	Large Corporate Accounts Sales (Over 3500 employees)	044	556-3440
	Faxbox Service	044	556-3490
	Switchboard	044	556-4300
	Web site: **support.jp.dell.com**		
Korea (Seoul)	Technical Support		toll free: 080-200-3800
	Sales		toll free: 080-200-3600
	Customer Service (Penang, Malaysia)		toll free: 604-633-4949
	Customer Service (Seoul, Korea)		080-200-3800
	Fax		2194-6202
	Switchboard		2194-6000
Macau *NOTE: Customers in Macau call Malaysia for customer assistance.*	Technical Support		toll free: 0800 582
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales		toll free: 0800 581
Malaysia (Penang)	Technical Support		toll free: 1 800 888 298
	Customer Service	04	633 4949
	Transaction Sales		toll free: 1 800 888 202
	Corporate Sales		toll free: 1 800 888 213
New Zealand	Home and Small Business		0800 446 255
	Government and Business		0800 444 617
	Sales		0800 441 567
	Fax		0800 441 566
Singapore (Singapore) *NOTE: Customers in Singapore call Malaysia for customer assistance.*	Technical Support		toll free: 800 6011 051
	Customer Service (Penang, Malaysia)	04	633 4949
	Transaction Sales		toll free: 800 6011 054
	Corporate Sales		toll free: 800 6011 053
South Africa (Johannesburg)	Technical Support	011	709 7710
	Customer Care	011	709 7707
	Sales	011	709 7700
	Fax	011	706 0495
	Switchboard	011	709 7700
	Website: **support.euro.dell.com**		
	E-mail: dell_za_support@dell.com		
Southeast Asian/Pacific Countries (excluding Australia, Brunei, China, Hong Kong, Japan, Korea, Macau, Malaysia, New Zealand, Singapore, Taiwan, and Thailand—refer to individual listings for these countries)	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)		60 4 633-4810
Taiwan	Technical Support		toll free: 0080 60 1225
	Technical Support (Servers)		toll free: 0080 60 1256
	Customer Service (Penang, Malaysia)		633 4949
	Transaction Sales		toll free:

			0080 651 228/0800 33 556
	Corporate Sales		toll free: 0080 651 227/0800 33 555
Thailand *NOTE: Customers in Thailand call Malaysia for customer assistance.*	Technical Support		toll free: 088 006 007
	Customer Service (Penang, Malaysia)		633 4949
	Sales		toll free: 088 006 009

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Hard Drives and Media

Hard Drives

Floppy, Tape, or CD-ROM Drives

General Information About Hard Drives

The small form-factor and small desktop systems support a single enhanced integrated drive electronics (EIDE) hard drive in the hard drive bay; the small mini-tower system supports two EIDE hard drives.

EIDE Drive Addressing

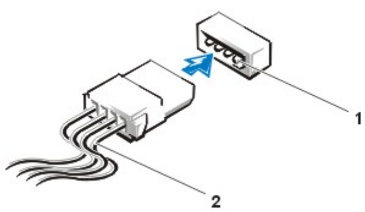
All EIDE devices require that you configure the cable select setting, which assigns master and slave status to devices according to their position on the interface cable. You usually configure a drive for cable select by setting a jumper or switch, depending on the drive. Refer to the drive documentation in your upgrade kit for information on configuring devices for the cable select setting. When you connect two EIDE devices to a single EIDE interface cable and configure them for the cable select setting, the device attached to the last connector on the interface cable is the master or boot device (drive 0), and the device attached to the middle connector on the interface cable is the slave device (drive 1).

With the two EIDE interface connectors on the system board, your system supports up to two EIDE devices. EIDE hard drives should be connected to the EIDE interface connector labeled "IDE1." (Always connect EIDE tape drives and CD-ROM drives to the EIDE interface connector labeled "IDE2.")

Connecting Drives

When you install a drive, you connect two cables—a DC power cable and an interface cable—to the back of the drive. Your drive's power input connector (to which you connect the DC power cable) resembles the following connector.

Power Cable Connector

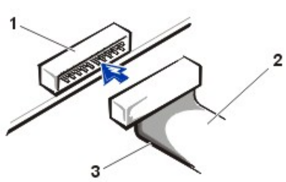


1 Power input connector

2 Power cable

The drive's interface connector is a card-edge connector or a header connector, as shown in the following figure.

Drive Interface Connectors



1 Header connector

2 Interface cable

3 Colored strip on the cable

When you attach the interface cable to a drive, be sure to match the colored strip on the cable to pin 1 of the drive's interface connector. For the location of pin 1 on the drive's interface connector, see the documentation that came with the drive.

When you disconnect an interface cable from the system board, be sure to press in on the locking tabs on the cable connector before you disconnect the cable. When you attach an interface cable to the system board, be sure that the locking tabs snap into place so that the cable is

firmly attached to the connector on the system board.

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored strip along one edge of the cable) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

NOTICE: When you connect an interface cable, do not reverse the interface cable (do not place the colored strip away from pin 1 of the connector). Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.

Small Form-Factor Desktop System Hard Drives

To install an EIDE hard drive in a small form-factor desktop system, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First — For You and Your Computer."

1. If you are replacing a hard drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.

NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

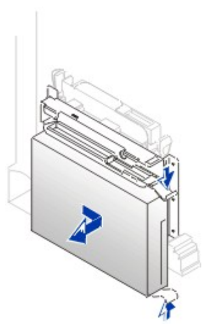
NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

2. Unpack the drive, and prepare it for installation.

   Check the documentation for the drive to verify that it is configured for your computer system.

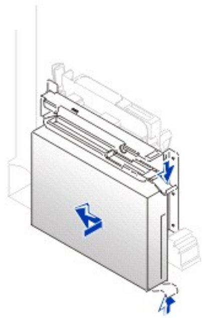
3. Open the computer cover.
4. Remove the drive bracket from the chassis.
   a. Disconnect the power and interface cables from the drive.
   b. Press in on the tabs on each side of the bracket, and slide it to the right and then out.
5. If your replacement hard drive does not have the bracket rails attached, remove the four screws holding the hard drive to the bracket rails,

Removing the Hard Drive in the Small Form-Factor Desktop System



6. If necessary, attach the bracket rails to the new hard drive by aligning the four screw holes of the drive and bracket and then inserting and tightening the screws that came with your upgrade kit.
7. Reinstall the hard drive bracket in the chassis by gently sliding the bracket into place until you hear it securely click.

Inserting a 1.6-Inch Hard Drive in the Small Form-Factor Desktop System

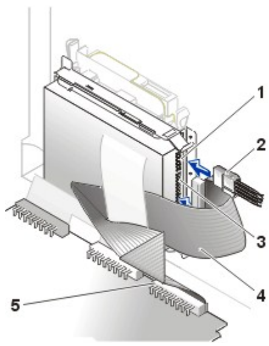


NOTICE: You must match the colored strip on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

8. Connect a power cable to the power input connector on the back of the drive, and connect one of the device connectors on the EIDE cable to the 40-pin interface connector on the back of the hard drive.

   Check all connectors to be certain that they are properly cabled and firmly seated.

Attaching Hard Drive Cables in the Small Form-Factor Desktop System



1 Drive power connector

2 Power cable

3 Drive IDE1 connector

4 EIDE cable

5 System board IDE1 connector

9. If it is not already connected, connect the other end of the EIDE cable to the IDE1 connector on the system board.
10. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.
11. If the drive you just installed is the primary drive, insert a bootable floppy into drive A.
12. Turn on the computer system.
13. Enter system setup, and update the appropriate **Primary Drive** option (**0** or **1**).
14. Exit system setup, and reboot the system.
15. Partition and logically format your drive before you proceed to the next step.

    See the documentation for your operating system for instructions.

16. Test the hard drive by running the Dell Diagnostics.

Small Desktop System Hard Drives

To install an EIDE hard drive in a small desktop system, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First — For You and Your Computer."

1. If you are replacing a hard drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.

NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface such as a foam pad, that will sufficiently cushion it.

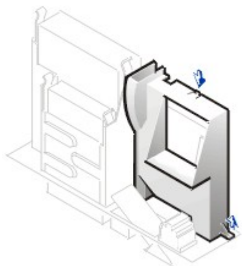
2. Unpack the drive, and prepare it for installation.

   Check the documentation for the drive to verify that it is configured for your computer system.

3. Open the computer cover.

4. Remove the plastic shroud covering the hard drive by pressing in on the indented tab at the top of the shroud and lifting the shroud away.

Removing the Hard Drive Shroud in the Small Desktop System



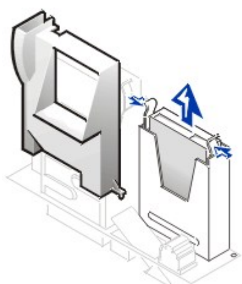
5. Remove the drive bracket from the chassis.

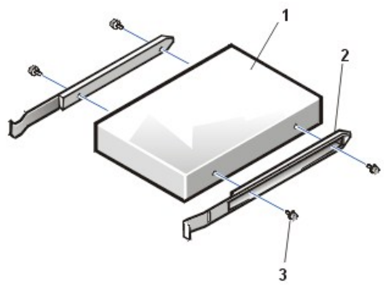
   a. If a hard drive is already installed in the drive bracket, disconnect the power and interface cables from the drive.

   b. Press in on the tabs on each side of the bracket, and slide it up and out.

6. If your replacement hard drive does not have the bracket rails attached, remove the four screws holding the hard drive to the bracket rails,

Removing the Hard Drive in the Small Desktop System





1 Drive

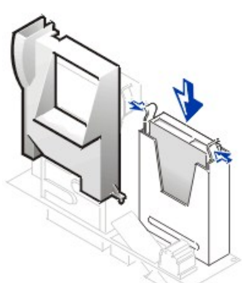
2 Bracket rails (2)

3 Screws (4)

7. Attach the bracket rails to the new hard drive by aligning the four screw holes of the drive and bracket and then inserting and tightening the screws that came with your upgrade kit.

8. Reinstall the hard drive bracket in the chassis by gently sliding the bracket into place until you hear it securely click.

Installing a 1.6-Inch Hard Drive in the Small Desktop System

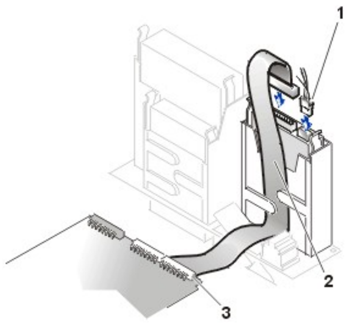


NOTICE: You must match the colored strip on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

9. Connect a power cable to the power input connector on the back of the drive, and connect one of the device connectors on the EIDE cable to the 40-pin interface connector on the back of the hard drive.

Check all connectors to be certain that they are properly cabled and firmly seated.

Attaching Hard Drive Cables in the Small Desktop System



1 Power cable
2 EIDE cable
3 IDE1 connector

10. If it is not already connected, connect the other end of the EIDE cable to the IDE1 connector on the system board.
11. Replace the plastic shroud covering the drive by inserting the two tabs on the bottom into the holes in the chassis and snapping the top into place.
12. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.
13. If the drive you just installed is the primary drive, insert a bootable floppy into drive A.
14. Turn on the computer system.
15. Enter system setup, and update the appropriate **Primary Drive** option (**0** or **1**).
16. Exit system setup, and reboot the system.
17. Partition and logically format your drive before you proceed to the next step.

    See the documentation for your operating system for instructions.
18. Test the hard drive by running the Dell Diagnostics.
19. If the drive you just installed is the primary drive, install your operating system on the hard drive.

    For instructions, refer to the documentation that came with your operating system.

Small Mini-Tower System Hard Drives

To install an EIDE hard drive in a small mini-tower system, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First — For You and Your Computer."

1. If you are replacing a hard drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.

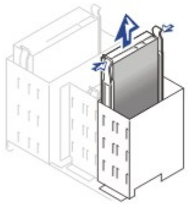
NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface such as a foam pad, that will sufficiently cushion it.

2. Unpack the drive, and prepare it for installation.

   Check the documentation for the drive to verify that it is configured for your computer system.
3. Open the computer cover.
4. If you are installing a new drive, skip to step 8.
5. Remove the drive bracket from the chassis.
   a. Disconnect the power and interface cables from the drive.
   b. Press in on the tabs on each side of the bracket, and slide it up and then out.
6. If your replacement hard drive does not have the bracket rails attached, remove the four screws holding the hard drive to the bracket rails.

Removing the Hard Drive in the Small Mini-Tower System

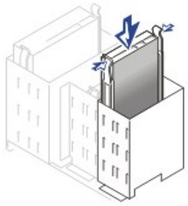


7. If necessary, attach the bracket rails to the new hard drive by aligning the four screw holes of the drive and bracket and then inserting and tightening the screws that came with your upgrade kit.

8. If you are installing a new drive, ensure that side bracket rails are attached. If they are not, install the extra set of bracket rails that are located inside the hard drive bay.

9. Install the hard drive bracket in the chassis by gently sliding the bracket into place until you hear it securely click.

Installing a Hard Drive in the Small Mini-Tower System

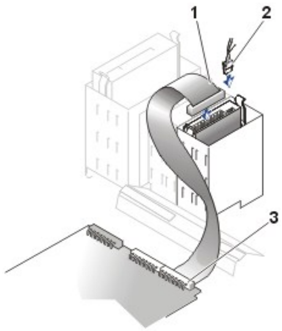


NOTICE: You must match the colored strip on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

10. Connect a power cable to the power input connector on the back of the drive, and connect one of the device connectors on the EIDE cable to the 40-pin interface connector on the back of the hard drive.

    Check all connectors to be certain that they are properly cabled and firmly seated.

Attaching Hard Drive Cables in the Small Mini-Tower System



1 EIDE cable
2 Drive power connector
3 System board IDE1 connector

11. If it is not already connected, connect the other end of the EIDE cable to the IDE1 connector on the system board.

12. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.

13. If the drive you just installed is the primary drive, insert a bootable floppy into drive A.

14. Turn on the computer system.

15. Enter system setup, and update the appropriate **Primary Drive** option (**0** or **1**).

16. Exit system setup, and reboot the system.

17. Partition and logically format your drive before you proceed to the next step.

    See the documentation for your operating system for instructions.

18. Test the hard drive by running the Dell Diagnostics.

Small Form-Factor Desktop System Floppy, Tape, or CD-ROM Drives

To install a floppy, tape, or CD-ROM drive in a small form-factor desktop system, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First—For You and Your Computer."

NOTICE: To avoid possibly damaging the drive by electrostatic discharge (ESD), ground yourself by touching an unpainted metal surface on the back of the computer.

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer system. Change any settings necessary for your configuration.

2. If you are installing an EIDE drive, configure the drive for the cable select setting.

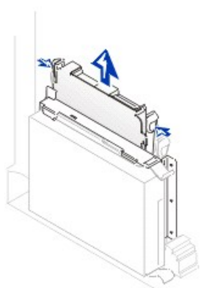
   You usually configure a drive for cable select by setting a jumper or switch, depending on the drive. For instructions on configuring the cable select setting, see the documentation that accompanied the drive.

3. Open the computer cover.
4. If a drive is already installed in the bay and you are replacing it, be sure to disconnect the power and interface cables from the back of the drive before you remove the drive and bracket assembly.

To remove and install the 3.5-inch floppy drive and bracket assembly, perform the following steps:

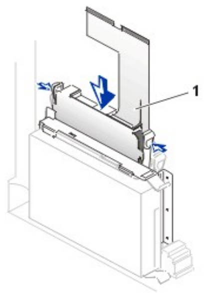
1. Disconnect the power cable and the floppy drive cable from the back of the drive. On the small form-factor desktop system, also remove the other end of the floppy cable from the connector on the system board.
2. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.
3. Slide the bracket upward, and remove it from the chassis.

Removing the 3.5-Inch Floppy Drive in the Small Form-Factor Desktop System



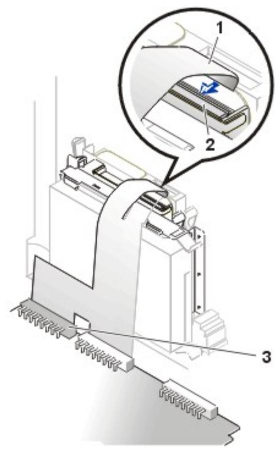
4. If the replacement drive does not have the bracket rails attached, remove the old drive from the bracket by removing the four screws that secure the drive to the bracket rails.
5. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.
6. Attach the floppy drive cable to the back of the drive.
7. Reinstall the 3.5-inch floppy drive and bracket assembly in the chassis by gently sliding the bracket into place until the tabs securely click into position.

Installing the 3.5 Inch Drive in the Small Form-Factor Desktop System



8. Connect the power cable to the power input connector on the back of the drive.
9. Connect the floppy drive cable to the interface connector on the system board.

Attaching Floppy Drive Cables in the Small Form-Factor Desktop System

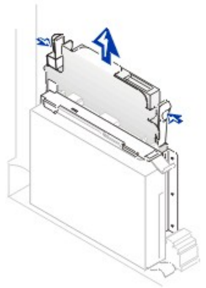


1 Floppy cable
2 Drive floppy connector
3 System board floppy connector (DSKT)

To remove and install a 5.25-inch drive in a small form-factor desktop system, perform the following steps:

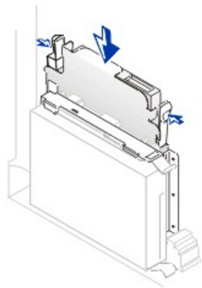
1. If you are replacing a 5.25-inch drive and bracket assembly, follow these instructions. If you are installing a new drive, skip to step 4.
    a. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.
    b. Slide the bracket upward, and remove it from the chassis.

Removing the 5.25-Inch Drive in the Small Form-Factor Desktop System



2. If the replacement drive does not have the bracket rails attached, remove the old drive from the bracket by removing the four screws that secure the drive to the bracket rails.
3. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

Installing a 5.25-Inch Drive in the Small Form-Factor Desktop System



4. Reinstall the 5.25-inch floppy drive and bracket assembly in the chassis by gently sliding the bracket into place until the tabs securely click into position.

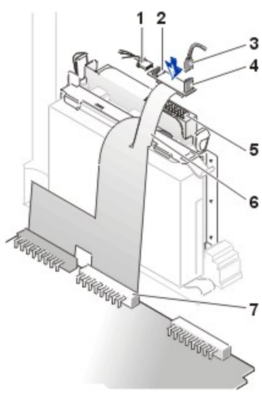
5. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.

6. Connect a power cable to the power input connector on the back of the drive.

7. Connect the appropriate interface cable to the interface connector on the back of the drive.

   If your system came with an EIDE CD-ROM or tape drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE interface cable provided in the drive kit.

Attaching Cables to the 5.25-Inch Drive in the Small Form-Factor Desktop System



1	DC power cable
2	Power input connector
3	Audio cable
4	Audio connector
5	Floppy/tape drive interface connector
6	Interface cable
7	System board interface connector (IDE2)

8. Connect the interface cable to the system board or a controller card, depending on the type of drive.

   - For an EIDE tape drive or CD-ROM drive, connect the other end of the interface cable to the interface connector labeled "IDE2" on the system board.
   - For a floppy drive or non-EIDE tape drive, connect the cable from the drive to the interface connector labeled "DSKT" on the system board.
   - For a drive that comes with its own controller card, connect the other end of the interface cable to the controller card.

9. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

10. If the 5.25-inch drive bay was previously empty, remove the front-panel insert from the front panel.

    a. Remove the 5.25-inch front panel with your fingers or a plastic screwdriver.

    b. Remove the insert.

    c. Replace the front panel piece by snapping it into place.

11. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.

12. Update your system configuration information.

    - If you installed a floppy drive, enter system setup and update the appropriate **Diskette Drive A** or **Diskette Drive B** option to reflect the size and capacity of your new floppy drive.
    - If you installed a non-EIDE tape drive as the second drive, set the **Diskette Drive B** option to **Not Installed**.

- If you installed an EIDE CD-ROM or tape drive, set the appropriate **Drive** option (**0** or **1**) under **Drives: Secondary** to **Auto**. See "Primary Drive *n* and Secondary Drive *n*" for more information.

13. Verify that your system works correctly by running the Dell Diagnostics.

NOTE: Tape drives sold by Dell come with their own operating software and documentation. After you install a tape drive, refer to the documentation that came with the drive for instructions on installing and using the tape drive software.

Small Desktop System Floppy, Tape, or CD-ROM Drives

To install a floppy, tape, or CD-ROM drive in a small desktop system, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First—For You and Your Computer."

NOTICE: To avoid possibly damaging the drive by ESD, ground yourself by touching an unpainted metal surface on the back of the computer.

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer system. Change any settings necessary for your configuration.

2. If you are installing an EIDE drive, configure the drive for the cable select setting.

   You usually configure a drive for cable select by setting a jumper or switch, depending on the drive. For instructions on configuring the cable select setting, see the documentation that accompanied the drive.

3. Open the computer cover.

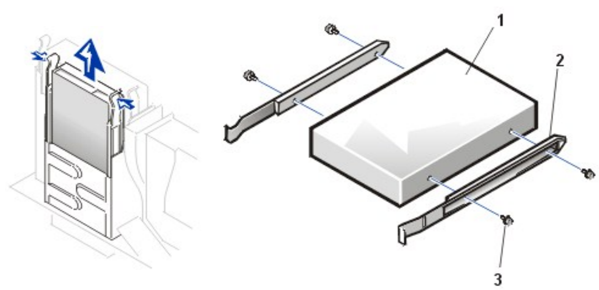
4. If a drive is already installed in the bay and you are replacing it, be sure to disconnect the power and interface cables from the back of the drive before you remove the drive and bracket assembly.

To remove and install the 3.5-inch floppy drive and bracket assembly, perform the following steps.

1. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.

2. Slide the bracket upward, and remove it from the chassis.

Removing the 3.5-Inch Floppy Drive in the Small Desktop System



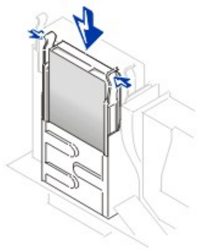
1 Drive
2 Bracket rails (2)
3 Screws (4)

3. If the replacement drive does not have the bracket rails attached, remove the old drive from the bracket by removing the four screws that secure the drive to the bracket rails.

4. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

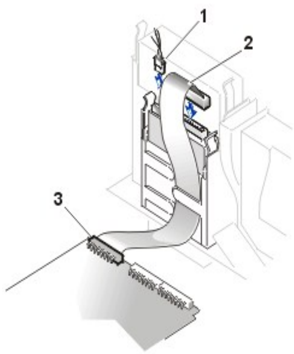
5. Reinstall the 3.5-inch floppy drive and bracket assembly in the chassis by gently sliding the bracket into place until the tabs securely click into position.

Installing the 3.5 Inch Drive in the Small Desktop System



6. Connect the power cable to the power input connector on the back of the drive.
7. Connect the appropriate interface cable to the interface connector on the back of the drive.

Attaching Floppy Drive Cables in the Small Desktop System

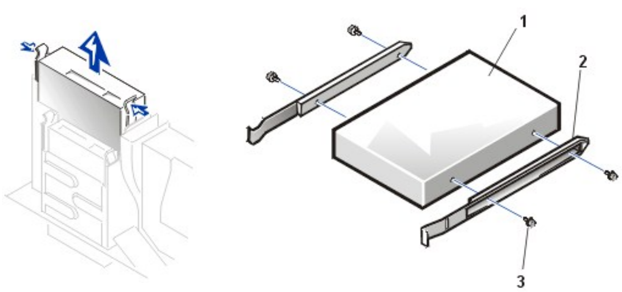


1 Power cable
2 Floppy cable
3 Floppy connector

To remove and install a 5.25-inch drive in a small desktop system, perform the following steps.

1. If you are replacing a 5.25-inch drive and bracket assembly, follow these instructions. If you are installing a new drive, skip to step 4.
    a. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.
    b. Slide the bracket upward, and remove it from the chassis.

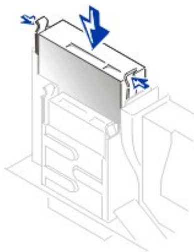
Removing the 5.25-Inch Drive in the Small Desktop System



1 Drive
2 Bracket rails (2)
3 Screws (4)

2. If the replacement drive does not have the bracket rails attached, remove the old drive from the bracket by removing the four screws that secure the drive to the bracket rails.
3. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.
4. If you are installing a new drive, connect it to the set of rails that are attached to the inside of the cover.

Installing a 5.25-Inch Drive in the Small Desktop System



5. Reinstall the 5.25-inch floppy drive and bracket assembly in the chassis by gently sliding the bracket into place until the tabs securely click into position.

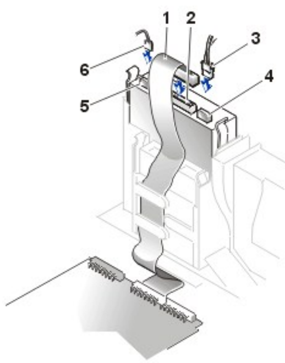
6. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.

7. Connect a power cable to the power input connector on the back of the drive.

8. Connect the appropriate interface cable to the interface connector on the back of the drive.

   If your system came with an EIDE CD-ROM or tape drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE interface cable provided in the drive kit.

Attaching Cables to the 5.25-Inch Drive in the Small Desktop System



1 Floppy/tape drive interface cable
2 Interface connector
3 DC power cable
4 Power input connector
5 Audio connector
6 Audio cable

9. Connect the interface cable to the system board or a controller card, depending on the type of drive.

   - For an EIDE tape drive or CD-ROM drive, connect the other end of the interface cable to the interface connector labeled "IDE2" on the system board.
   - For a floppy drive or non-EIDE tape drive, connect the cable from the drive to the interface connector labeled "DSKT" on the system board.
   - For a drive that comes with its own controller card, connect the other end of the interface cable to the controller card.

10. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

11. If the 5.25-inch drive bay was previously empty, remove the front-panel insert from the front panel.

    a. Remove the 5.25-inch front panel with your fingers or, carefully, with a screwdriver.

    b. Remove the insert.

    c. Replace the front panel piece by snapping it into place.

12. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.

13. Update your system configuration information.

    - If you installed a floppy drive, enter system setup and update the appropriate **Diskette Drive A** or **Diskette Drive B** option to reflect the size and capacity of your new floppy drive.
    - If you installed a non-EIDE tape drive as the second drive, set the **Diskette Drive B** option to **Not Installed**.
    - If you installed an EIDE CD-ROM or tape drive, set the appropriate **Drive** option (**0** or **1**) under **Drives: Secondary** to **Auto**. See "Primary Drive *n* and Secondary Drive *n*" for more information.

14. Verify that your system works correctly by running the Dell Diagnostics.

NOTE: Tape drives sold by Dell come with their own operating software and documentation. After you install a tape drive, refer to the documentation that came with the drive for instructions on installing and using the tape drive software.

Small Mini-Tower System Floppy, Tape, or CD-ROM Drives

To install a floppy, tape, or CD-ROM drive in a small mini-tower system, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First—For You and Your Computer."

NOTICE: To avoid possibly damaging the drive by electrostatic discharge (ESD), ground yourself by touching an unpainted metal surface on the back of the computer.

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer system. Change any settings necessary for your configuration.

2. If you are installing an EIDE drive, configure the drive for the cable select setting.

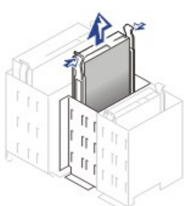
   You usually configure a drive for cable select by setting a jumper or switch, depending on the drive. For instructions on configuring the cable select setting, see the documentation that accompanied the drive.

3. Open the computer cover.
4. If a drive is already installed in the bay and you are replacing it, be sure to disconnect the power and interface cables from the back of the drive before you remove the drive and bracket assembly.

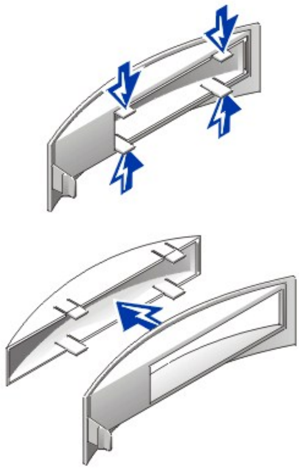
To remove and install the 3.5-inch floppy drive and bracket assembly, perform the following steps. If you are installing a new floppy drive, skip to step 5.

1. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.
2. Slide the bracket upward, and remove it from the chassis.

Removing the 3.5-Inch Floppy Drive in the Small Mini-Tower System

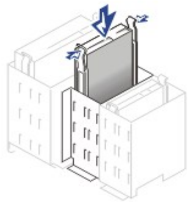


3. If the replacement drive does not have the bracket rails attached, remove the old drive from the rails by removing the four screws that secure them to the drive.
4. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.
5. If the new floppy drive does not have the bracket rails attached, install the extra rail set that is located inside your computer, underneath the cover.
6. If the new drive is going into a previously empty bay, remove the front panel and remove the insert by pressing on the four tabs and pulling the insert away from the panel. Replace the front panel by snapping into place.



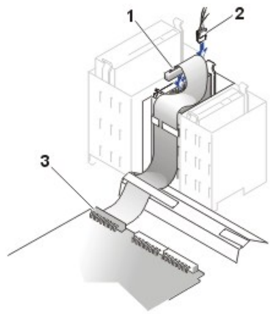
7. Install the 3.5-inch floppy drive and bracket assembly in the chassis by gently sliding the bracket into place until the tabs securely click into position.

Installing the 3.5 Inch Drive in the Small Mini-Tower System



8. Connect the power cable to the power input connector on the back of the drive.
9. Connect the appropriate interface cable to the interface connector on the back of the drive.

Attaching Floppy Drive Cables in the Small Mini-Tower System

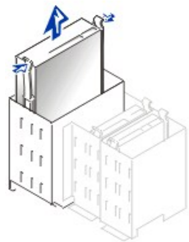


1 DC power cable
2 Floppy drive connector
3 System board floppy connector (DSKT)

To remove and install a 5.25-inch drive in a small mini-tower system, perform the following steps:

1. If you are replacing a 5.25-inch drive and bracket assembly, follow these instructions. If you are installing a new drive, skip to step 4.
   a. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.
   b. Slide the bracket upward, and remove it from the chassis.

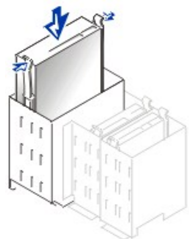
Removing the 5.25-Inch Drive in the Small Mini-Tower System



2. If the replacement drive does not have the bracket rails attached, remove the old drive from the bracket by removing the four screws that secure the drive to the bracket rails.

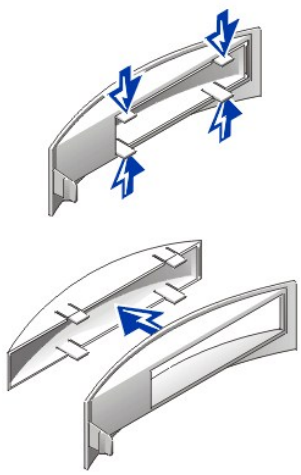
3. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

Installing a 5.25-Inch Drive in the Small Mini-Tower System



4. If the new drive does not have the bracket rails attached, install the extra rail set that is located inside your computer, underneath the cover.

5. If the new drive is going into a previously empty bay, remove the 5.25-inch front panel and remove the insert by pressing on the four tabs and pulling the insert away from the panel. Replace the front panel by snapping into place.



6. Install the 5.25-inch floppy drive and bracket assembly in the chassis by gently sliding the bracket into place until the tabs securely click into position.

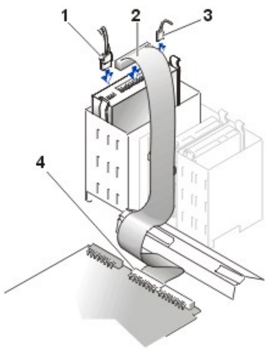
7. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.

8. Connect a power cable to the power input connector on the back of the drive.

9. Connect the appropriate interface cable to the interface connector on the back of the drive.

   If your system came with an EIDE CD-ROM or tape drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE interface cable provided in the drive kit.

Attaching Cables to the 5.25-Inch Drive in the Small Mini-Tower System



1 DC power connector

2 Floppy/tape drive interface connector

3 Audio connector

4 System board interface connector (IDE2)

NOTE: If you install a second 5.25-inch device, do not route the cable through the plastic clips on the side of the 3.5-inch bay.

10. Connect the interface cable to the system board or a controller card, depending on the type of drive.

    - For an EIDE tape drive or CD-ROM drive, connect the other end of the interface cable to the interface connector labeled "IDE2" on the system board.
    - For a floppy drive or non-EIDE tape drive, connect the cable from the drive to the interface connector labeled "DSKT" on the system board.
    - For a drive that comes with its own controller card, connect the other end of the interface cable to the controller card.

11. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
12. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.
13. Update your system configuration information.

    - If you installed a floppy drive, enter system setup and update the appropriate **Diskette Drive A** or **Diskette Drive B** option to reflect the size and capacity of your new floppy drive.
    - If you installed a non-EIDE tape drive as the second drive, set the **Diskette Drive B** option to **Not Installed**.
    - If you installed an EIDE CD-ROM or tape drive, set the appropriate **Drive** option (**0** or **1**) under **Drives: Secondary** to **Auto**. See "Primary Drive *n* and Secondary Drive *n*" for more information.

14. Verify that your system works correctly by running the Dell Diagnostics.

NOTE: Tape drives sold by Dell come with their own operating software and documentation. After you install a tape drive, refer to the documentation that came with the drive for instructions on installing and using the tape drive software.

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Help Overview: Dell™ OptiPlex™ GX150 System User's Guide

Technical Assistance

If you need assistance with a technical problem, perform the following steps:

1. Run the Dell Diagnostics.
2. Make a copy of the Diagnostics Checklist and fill it out.
3. Use Dell's extensive suite of online services available at the Dell website (**www.dell.com**) for help with installation and troubleshooting procedures.
4. If the preceding steps have not resolved the problem, call Dell for technical assistance.

   When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

   NOTE: Dell's Express Service Code system may not be available in all countries.

For instructions on using the technical support service, see "Technical Support Service" and "Before You Call."

Help Tools

Dell provides a number of tools to assist you. These tools are described in the following sections.

NOTE: Some of the following tools are not always available in all locations outside the continental U.S. Please call your local Dell representative for information on availability.

World Wide Web

The Internet is your most powerful tool for obtaining information about your computer and other Dell products. Through the Internet, you can access most of the services described in this section, including AutoTech, TechFax, order status, technical support, and product information.

You can access Dell | Support at **support.dell.com**. Select your region on the **WELCOME TO DELL SUPPORT** page, and fill in the requested details to access help tools and information.

You can contact Dell electronically by using the following addresses:

- World Wide Web

  www.dell.com/

  www.dell.com/ap/ (for Asian/Pacific countries only)

  www.euro.dell.com (for Europe only)

  www.dell.com/la/ (for Latin American countries)

- Anonymous file transfer protocol (FTP)

  ftp.dell.com/

  Log in as user: `anonymous`, and use your e-mail address as your password.

- Electronic Support Service

  support@us.dell.com

apsupport@dell.com (for Asian/Pacific countries only)

support.euro.dell.com (for Europe only)

- Electronic Quote Service

  sales@dell.com

  apmarketing@dell.com (for Asian/Pacific countries only)

- Electronic Information Service

  info@dell.com

AutoTech Service

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their portable and desktop computer systems.

When you call AutoTech, you use your touch-tone telephone to select the subjects that correspond to your questions.

The AutoTech service is available 24 hours a day, seven days a week. You can also access this service through the technical support service. For the telephone number to call, see the contact numbers for your region.

TechFax Service

Dell takes full advantage of fax technology to serve you better. Twenty-four hours a day, seven days a week, you can call the Dell TechFax line toll-free for all kinds of technical information.

Using a touch-tone phone, you can select from a full directory of topics. The technical information you request is sent within minutes to the fax number you designate. For the TechFax telephone number to call, see the contact numbers for your region.

Automated Order-Status System

You can call this automated service to check on the status of any Dell products that you have ordered. A recording prompts you for the information needed to locate and report on your order. For the telephone number to call, see the contact numbers for your region.

Technical Support Service

Dell's industry-leading hardware technical support service is available 24 hours a day, seven days a week, to answer your questions about Dell hardware.

Our technical support staff pride themselves on their track record: more than 90 percent of all problems and questions are taken care of in just one toll-free call, usually in less than 10 minutes. When you call, our experts can see records kept on your Dell system to better understand your particular question. Our technical support staff uses computer-based diagnostics to provide fast, accurate answers to questions.

To contact Dell's technical support service, see "Before You Call" and then call the number for your country as listed in "Contacting Dell."

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip handy when you call. For the telephone number to call, see the contact numbers for your region.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at **www.dell.com**. For the telephone number to call to speak to a sales specialist, see "Contacting Dell."

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain an authorization number, and write it clearly and prominently on the outside of the box.

   For the telephone number to call, see the contact numbers for your region.

2. Include a copy of the invoice and a letter describing the reason for the return.
3. Include a copy of the Diagnostics Checklist indicating the tests you have run and any error messages reported by the Dell Diagnostics.

4. Include any accessories that belong with the item(s) being returned (power cables, software diskettes, guides, and so on) if the return is for credit.

5. Pack the equipment to be returned in the original (or equivalent) packing materials.

You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect On Delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at our receiving dock and returned to you.

Before You Call

NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the Diagnostics Checklist. If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer system itself. Make sure the system documentation is available.

CAUTION: If you need to remove the computer covers, be sure to first disconnect the computer system's power and modem cables from all electrical outlets.

Diagnostics Checklist

Date:
Name:
Address:
Phone number:
Service tag (bar code on the back of the computer):
Express Service Code:
Return Material Authorization Number (if provided by Dell support technician):
Operating system and version:
Peripherals:
Expansion cards:
Are you connected to a network? Yes No
Network, version, and network card:
Programs and versions:
See your operating system documentation to determine the contents of the system’s start-up files. If the computer is connected to a printer, print each file. Otherwise, record the contents of each file before calling Dell.
Error message, beep code, or diagnostic code:
Description of problem and troubleshooting procedures you performed:

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Temporary file. Delete before release.

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Solving Problems: Dell™ OptiPlex™ GX150 System User's Guide

Finding Solutions

This section describes system and software problems, offers corrective actions, describes the utility, and provides system messages and codes. Before you call Dell for technical assistance, complete the following tasks to help you resolve computer problems:

Read "About Your Computer" and "Safety Information."

Take the problem-solving action listed in the following table for the component or equipment that is malfunctioning.

Power indicator does not light	See "Power Problems"
Monitor power indicator does not light	See "Video and Monitor Problems"
No sound	See "Sound and Speaker Problems"
Printer not working	See "Printer Problems"
Serial or other parallel devices not working	See "Serial or Parallel Device Problems"
Mouse not working	See "Mouse Problems"
Keyboard not working	See "Keyboard Problems"
Diskette drive or hard drive: indicators not lit, scraping or unusual noises, no noise	See "Drive Problems"
System battery not working	See "Battery Problems"
Expansion card errors or malfunction	See "Expansion Card Problems"
A program locks up	See "Recover From a Program That Is Not Responding"
Computer locks up	See "Restart a Computer That Is Not Responding"
Computer gets wet	See "Repairing a Wet Computer"
Computer is dropped or damaged	See "Repairing a Dropped or Damaged Computer"
Hardware devices conflict	See "Hardware Conflicts"
System memory amount is not correct	See "System Memory Problems"
System board malfunctions	See "System Board Problems"
System board is damaged	See "Resetting a Damaged System Board"
An error message	See "Messages and Codes"
A series of beeps on system startup	See "Messages and Codes"

Power Problems

Basic Checks:

- Test the electrical outlet: ensure that the electrical outlet is working by testing it with another device such as a lamp.
- Connect the computer power cable directly to an electrical outlet: bypass power protection devices, power strips, and extension cords to verify that the computer turns on.
- Check for interference: electrical appliances on the same circuit or operating in close proximity to the computer can cause interference.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps:

1. Turn off the computer and peripherals, and disconnect them from their electrical outlets.
2. If you are using a surge protector, remove it.
3. Make sure the power cable is firmly connected to the computer, and then verify that the power cable is directly connected to the electrical

outlet.

4. Turn on the computer.

   Does the power indicator LED on the front of the computer light up?

   Yes. The problem is resolved.

   No. The computer may be defective. Contact Dell for technical assistance.

Video and Monitor Problems

Basic Checks:

- If the monitor power indicator does not light, check the power connection.
- If the external monitor is blank, the computer may be in suspend or hibernate mode. To resume normal operation, press the power button.
- Disconnect the monitor cable from the computer and check the cable connector for bent or broken pins. Check for damaged or frayed cables.
- If the cable is not damaged, make sure that it is firmly connected to the computer.
- Test the electrical outlet. Verify that the device is connected to a working electrical outlet. Verify that the device is turned on.
- Check for interference: electrical appliances on the same circuit or operating in close proximity to the computer can cause interference.
- Adjust brightness and contrast settings on the monitor.
- Reinstall the video driver for your operating system.
- Restart the computer.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps:

1. Turn off the computer, wait at least 30 seconds, and then turn the computer back on.
2. Allow 1 minute for the computer to initialize its components, and then adjust the monitor's brightness and contrast controls.

   Is the monitor readable?

   Yes. The problem is resolved.

   No. Go to step 3.

3. Turn off nearby fans, lights, lamps, or other electrical devices.

   Is the monitor readable?

   Yes. One or more of those devices was causing interference. The problem is resolved.

   No. Go to step 4.

4. Enter system setup and make sure that **Primary Video Controller** under the **Integrated Devices** option is set correctly. Then exit system setup properly to save the information, and reboot the system.

   For an AGP expansion card, set **Primary Video Controller** to **AGP**; for an integrated video controller (a chip on the system board), set **Primary Video Controller** to **Onboard**; for a PCI expansion card, set **Primary Video Controller** to **Auto**.

   Is the device working properly?

   Yes. The problem is resolved.

   No. Go to step 5.

5. Run the **VESA/VGA Interface** tests in the Dell Diagnostics.

   Did any of the tests fail?

   Yes. The video controller on the system board may be defective. Contact Dell for technical assistance.

   No. Go to step 6.

6. Turn off the computer and the monitor, connect another monitor to the computer, and then turn them on.

If you do not have another monitor, contact Dell for technical assistance.

7. Allow one minute for the computer to initialize its components, and then adjust the monitor's brightness and contrast controls.

   Is the monitor readable?

   Yes. The original monitor is defective. The problem is resolved.

   No. Contact Dell for technical assistance.

Sound and Speaker Problems

Basic Checks:

- If using external speakers:
  - Make sure that the speaker cables are firmly connected to the computer.
  - Test the electrical outlet: verify that the speakers are connected to a working electrical outlet.
  - Ensure that the speakers are turned on.
- If using a sound card, make sure external audio devices are connected to the sound card’s connectors and not to the microphone, line-out, or line-in connectors on the system's front or back panels.
- Adjust the volume.
- Reinstall the audio driver for your operating system.
- Check for interference: electrical appliances on the same circuit or operating in close proximity to the computer can cause interference.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps:

1. Turn off nearby fans, lights, lamps, or other electrical devices.

   Are the external speakers functioning properly?

   Yes. One or more of those electrical devices was causing interference. The problem is resolved.

   No. Go to step 2.

2. Enter system setup and make sure that **Sound** under the **Integrated Devices** option is set to **On**. Then exit system setup properly to save the information, and reboot the system.

   Is the device working properly?

   Yes. The problem is resolved.

   No. Go to step 3.

3. Run the **Misc. PCI Devices** tests in the Dell Diagnostics.

   Did the tests complete successfully?

   Yes. The controller is functioning properly. If the problem persists, contact Dell for technical assistance.

   No. Contact Dell for technical assistance.

Printer Problems

Basic Checks:

- Disconnect the cable from the computer and check the cable connector for bent or broken pins. Check for damaged or frayed cables.
- If the cable is not damaged, make sure that it is firmly connected to the computer.
- Test the electrical outlet: verify that the printer is connected to a working electrical outlet.
- Ensure that the printer is turned on.
- Check for interference: electrical appliances on the same circuit or operating in close proximity to the computer can cause interference.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps:

1. Perform the procedure in "Serial or Parallel Device Problems."

Is the device working properly?

Yes. The problem is resolved.

No. Go to step 2.

2. Run the printer's self-test.

   Does the self-test complete successfully?

   Yes. Go to step 3.

   No. The printer is probably defective. If you bought the printer from Dell, contact Dell for technical assistance. If you did not, take it to an authorized service center for repair.

3. Try to print again.

   Does the print operation complete successfully?

   Yes. The problem is resolved.

   No. Contact Dell for technical assistance.

Serial or Parallel Device Problems

NOTE: If you are having a problem with a printer, see "Printer Problems."

If a system error message indicates a port problem or if equipment connected to a port seems to perform incorrectly or not at all, the source of the problem can be any of the following:

- A faulty connection between the I/O port and the device
- Incorrect settings for system setup options
- Incorrect settings in the operating system's configuration files
- A faulty cable between the I/O port and the device
- A faulty device
- Faulty I/O port logic on the system board
- Conflicting COM port settings
- Lack of drivers

Basic Checks:

- Disconnect the cable from the computer and check the cable connector for bent or broken pins. Check for damaged or frayed cables.
- If the cable is not damaged, make sure that it is firmly connected to the computer.
- Test the electrical outlet. Verify that the device is connected to a working electrical outlet.
- Verify that the device is turned on.
- Check for interference: electrical appliances on the same circuit or operating in close proximity to the computer can cause interference.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps:

1. Enter system setup and check the **Integrated Devices** option settings. Then exit system setup properly to save the information, and reboot the system.

   For a serial device, check the **Serial Port** options; for a parallel device, check the **Parallel Port** options. See the device's documentation for additional information on port settings and configuration requirements.

   Is the device working properly?

   Yes. The problem is resolved.

   No. Go to step 2.

2. Run the **Serial Ports** device group and/or the **Parallel Ports** device group in the Dell Diagnostics.

These device groups check the basic functions of the system board's I/O port logic. If a printer is connected to the parallel port, the **Parallel Ports** device group tests the communication link between the system board's I/O port logic and the printer.

Do the tests complete successfully?

Yes. Go to step 3.

No. Contact Dell for technical assistance.

3. If the problem is confined to a particular application program, see the application program's documentation for specific port configuration requirements.

   Is the device working properly?

   Yes. The problem is resolved.

   No. Go to step 4.

4. Turn off the computer and the device, swap the device's cable with a known working cable, and then turn on the computer and the device.

   Is the device working properly?

   Yes. You need a new device cable. Contact Dell for technical assistance.

   No. Go to step 5.

5. Turn off the computer and the device, swap the device with a comparable working device, and then turn on the computer and the device.

   Is the device working properly?

   Yes. You need a new device. Contact Dell for technical assistance.

   No. Contact Dell for technical assistance.

Mouse Problems

Basic Checks:

- Disconnect the cable from the computer and check the cable connector for bent or broken pins. Check for damaged or frayed cables.
- If the cable is not damaged, make sure that it is firmly connected to the computer.
- Reinstall the mouse driver for your operating system.
- Restart the computer.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps:

1. If you are using a PS/2 mouse, enter system setup and make sure that **Mouse Port** under the **Integrated Devices** option is set to **On**. Then exit system setup properly to save the information, and reboot the system.

   Is the device working properly?

   Yes. The problem is resolved.

   No. Go to step 2.

2. If you are using a PS/2 mouse, run the **Mouse** test in the **Pointing Devices** device group in the Dell Diagnostics.

   Did the tests complete successfully?

   Yes. Go to step 3.

   No. Contact Dell for technical assistance.

3. Turn off the computer, connect another mouse to the computer, and then turn the computer on.

   If you do not have another mouse, contact Dell for technical assistance.

   Is the mouse functioning properly?

   Yes. The original mouse is defective. The problem is resolved.

   No. Contact Dell for technical assistance.

Keyboard Problems

Basic Checks:

- Disconnect the cable from the computer and check the cable connector for bent or broken pins. Check for damaged or frayed cables.
- If the cable is not damaged, make sure that it is firmly connected to the computer.
- Check for interference. Keyboard extension cables can cause problems.
- Restart the computer.

If the problem still exists after you complete the basic checks, fill out the Diagnostic Checklist as you perform the following steps:

1. Turn off the computer, and then disconnect the keyboard cable and check it for bent or broken pins.

   Do you see bent pins?

   Yes. If they can be straightened, straighten them and go to step 2. If they cannot be straightened or are broken, you must replace the keyboard.

   No. Go to step 2.

2. Reconnect the keyboard to the computer.

   Make sure the keyboard cable is firmly connected to computer.

3. Turn on the computer.
4. If you are using a keyboard that can be configured with various switch settings, make sure the switch is set to **PS/2**, **Enhanced XT/AT**, or **PC/AT**.

   The switch settings are usually on the bottom of the keyboard, sometimes behind a panel. Refer to the documentation that came with the keyboard for more information.

5. Turn off the computer, wait 30 seconds, and turn it on again.

   During the boot routine, do the Num Lock, Caps Lock, and Scroll Lock lights on the keyboard blink momentarily?

   Yes. Go to step 6.

   No. Go to step 7.

6. Use the keyboard to type some characters.

   Do the characters appear on the screen?

   Yes. The problem is resolved.

   No. Contact Dell for technical assistance.

7. Run the **PC-AT Compatible Keyboards** tests in the Dell Diagnostics.

   Did any of the diagnostics tests fail?

   Yes. The original keyboard may be defective. Go to step 8.

   No. Go to step 8.

8. Turn off the computer, connect another keyboard to the computer, and then turn the computer on.

   If you do not have another keyboard, contact Dell for technical assistance.

   Is the keyboard functioning properly?

   Yes. The original keyboard is defective. The problem is resolved.

   No. Contact Dell for technical assistance.

Drive Problems

Diskette Drive Problems

During the power-on self-test (POST), the computer checks the diskette drive, comparing its characteristics with the system configuration information. The diskette-drive access light blinks as the computer performs this check.

Basic Checks:

- If you hear an unfamiliar scraping or grinding sound when a drive is accessed, there could be a hardware malfunction. Contact Dell for technical assistance.
- When you turn on the computer, you can hear drive activity during the boot routine. If your computer does not boot, contact Dell for technical assistance.
- If you are trying to copy data to the diskette, make sure that it is not write-protected.
- Try a different diskette in the drive. If the new diskette works, the original one may be defective.
- Test the diskette drive access indicator by using one of the following methods:
  - Using MS-DOS®, insert a diskette into the drive, type `dir a:` at the DOS prompt, and press <Enter>.
  - Using Microsoft® Windows® or Windows NT®, insert a diskette into the drive, open **My Computer** from the desktop, and double-click the diskette drive icon.
- Check the settings in system setup.
- Clean the drive using a commercially available cleaning kit.

NOTICE: Do not attempt to clean drive heads with a swab. You may accidentally misalign the heads, rendering the drive inoperable.

If the problem still exists after you complete the basic checks, fill out the Diagnostics Checklist as you perform the following steps.

CAUTION: Before you perform this procedure, see "Safety Information."

1. Run the **Diskette** device group in the Dell Diagnostics.

   Did any of the tests fail?

   Yes. Contact Dell for technical assistance.

   No. Go to step 2.

2. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
3. Remove and reinstall the diskette drive.
4. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

   Does the diskette-drive access light blink during the boot routine?

   Yes. Go to the next question.

   No. Contact Dell for technical assistance.

   Does the computer display a drive error message?

   Yes. See "System Messages" for an explanation of the message, and then go to step 5.

   No. The problem is resolved.

5. Insert a bootable diskette into the diskette drive and reboot the computer.

   Does the drive boot the operating system?

   Yes. The problem is probably resolved. If you continue to experience trouble, contact Dell for technical assistance.

   No. Contact Dell for technical assistance.

Hard Drive Problems

Basic Checks:

- If you hear an unfamiliar scraping or grinding sound when a drive is accessed, there could be a hardware malfunction. Contact Dell for technical assistance.
- When you turn on the computer, you can hear drive activity during the boot routine. If your computer does not boot, contact Dell for technical assistance.
- Test the hard drive by using one of the following methods:

- For Windows XP and Windows 2000, run the chkdsk utility by clicking the **Start** button, selecting **Run**, and then typing `cmd` in the dialog box. At the `C:` prompt, type `chkdsk` and press <Enter>.

  This utility creates and displays a status report, and lists and corrects errors on the disk.

- For Windows NT, run the error-checking utility by double-clicking **My Computer** and selecting the hard drive that you want to check. Click the right mouse button, select **Properties**, then click **Tools**, and select **Check Now** in the **Error Checking** section.

- For Windows 98 SE and Windows 98, run the ScanDisk utility by clicking the **Start** button, pointing to **Run**, typing `scandskw` in the dialog box, selecting the type of test to run, and then clicking **Start**.

- For MS-DOS, type `scandisk x:` at an MS-DOS prompt, where `x` is the hard drive letter, and press <Enter>.

If the problem still exists after you complete the basic checks, fill out the Diagnostic Checklist as you perform the following steps:

CAUTION: Before you perform this procedure, see "Safety Information."

1. Enter system setup and make sure the problem drive is configured correctly. Make any necessary changes, and reboot the system.

   Is the drive operating properly?

   Yes. The problem is resolved.

   No. Proceed to step 2.

2. Test the hard drive by using one of the following methods:

   - For Windows XP and Windows 2000, run the chkdsk utility by clicking the **Start** button, selecting **Run**, and then typing `cmd` in the dialog box. At the `C:` prompt, type `chkdsk` and press <Enter>.

     This utility creates and displays a status report, and lists and corrects errors on the disk.

   - For Windows NT, run the error-checking utility by double-clicking **My Computer** and selecting the hard drive that you want to check. Click the right mouse button, select **Properties**, then click **Tools**, and select **Check Now** in the **Error Checking** section.

   - For Windows 98 SE and Windows 98, run the ScanDisk utility by clicking the **Start** button, pointing to **Run**, typing `scandskw` in the dialog box, selecting the type of test to run, and then clicking **Start**.

   - For MS-DOS, type `scandisk x:` at an MS-DOS prompt, where `x` is the hard drive letter, and press <Enter>.

   Is the drive operating properly?

   Yes. The problem is resolved.

   No. Proceed to step 3.

3. Run the appropriate test group in the Dell Diagnostics:

   - For an IDE hard drive, run the **IDE Devices** device group.
   - For a SCSI hard drive, run the **SCSI Devices** device group.

     Did any of the diagnostics tests fail?

     Yes. Go to the next question.

     No. Proceed to step 4.

     Did any of the diagnostics tests indicate a faulty drive?

     Yes. The hard drive may be faulty. Contact Dell for technical assistance.

     No. Go to the next question.

     Did any of the diagnostics tests indicate a faulty drive controller?

     Yes. The system board may be faulty. Contact Dell for technical assistance.

     No. Proceed to step 4.

   - Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.

   - Make sure the DC power cables from the power supply are firmly connected to the connectors on each drive. Also verify that the

interface cable for each drive is firmly connected to the drive and to the system board.

- Make sure the control panel cable is firmly connected to the system board. The control panel contains the hard drive activity LED. To locate the control panel system board connector, see the system board.
- Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

  Does the hard drive activity light blink during the boot routine?

  Yes. Go to the next question.

  No. The system board may be faulty. Contact Dell for technical assistance.

  Does the computer display a drive error message?

  Yes. See "System Messages" for an explanation of the message. If you cannot correct the problem by performing the action described in the table, then contact Dell for technical assistance.

  No. Go to the next question.

  Is this the primary hard drive that contains the operating system?

  Yes. Go to the next question.

  No. Contact Dell for technical assistance.

  Does the drive boot the operating system?

  Yes. Go to the next question.

  No. Files in the operating system may be corrupt. See your operating system documentation.

  Is the drive operating properly?

  Yes. The problem is resolved.

  No. Contact Dell for technical assistance.

Battery Problems

If an error message indicates a problem with the battery or if configuration information is lost from system setup when the computer is turned off, the battery may be defective.

CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

CAUTION: Before you perform this procedure, see "Safety Information."

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
2. Reseat the battery in its socket with the side labeled "+" facing up.
3. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.
4. Enter system setup and reenter the current time and date. Then exit system setup properly to save the information.
5. Turn off your computer and disconnect it from its electrical outlet. Leave the computer off for at least 10 minutes.
6. Reconnect the computer to its electrical outlet and turn it on.
7. Enter system setup, and check the date and time.

   Are the date and time correct?

   Yes. The problem is resolved.

   No. The battery may be defective. Proceed to step 8.

8. Replace the battery.

   Is the battery working properly?

Yes. The problem is resolved.

No. You may have a faulty system board. Contact Dell for technical assistance.

Expansion Card Problems

If an error message indicates an expansion card problem or if an expansion card seems to perform incorrectly or not at all, the problem could be a faulty connection, a conflict with software or other hardware, or a faulty expansion card.

Fill out the Diagnostics Checklist as you perform the following steps.

CAUTION: Before you perform this procedure, see "Safety Information."

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
2. If you have a mini tower chassis, remove the AGP card brace.
3. Make sure each expansion card is firmly seated in its connector. If any expansion cards are loose, reseat them.
4. Make sure all cables are firmly connected to their corresponding connectors on the expansion cards. If any cables appear loose, reconnect them.

   For instructions on which cables should be attached to specific connectors on an expansion card, see the expansion card's documentation.
5. If you have a mini tower chassis, replace the AGP card brace.
6. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

   Is the system working properly?

   Yes. The problem is resolved.

   No. You may have a faulty expansion card. Proceed to step 7.
7. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
8. Remove all expansion cards except the video card.

NOTE: If your primary hard drive is connected to a drive controller card and not one of the system board EIDE connectors, leave the drive controller card installed in the computer.

9. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.
10. Run the **RAM** test group in the Dell Diagnostics.

    Did any of the diagnostics tests fail?

    Yes. Contact Dell for technical assistance.

    No. Proceed to step 11.
11. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
12. Reinstall one of the expansion cards that you removed previously, and repeat steps 9 and 10.

    Did any of the diagnostics tests fail?

    Yes. The expansion card you just reinstalled is faulty and needs to be replaced.

    No. Repeat steps 11 and 12 with another expansion card. Proceed to step 13.
13. If you have replaced all the expansion cards and the problem is not resolved, contact Dell for technical assistance.

Recover From a Program That Is Not Responding

1. Press <Ctrl><Alt><Delete>.
2. The **Close Program** window appears.

3. Click the program that no longer responds.
4. Click **End Task**.

Restart a Computer That Is Not Responding

1. Press and hold the power button until the computer turns off.
2. Press the power button to turn on the computer.

Repairing a Wet Computer

Spills, splashes, and excessive humidity can cause damage to the system. If an external device, such as a printer or modem, gets wet, contact the manufacturer of the device for instructions.

CAUTION: Before you perform this procedure, see "Safety Information."

Fill out the Diagnostics Checklist as you perform the following steps:

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
2. Let the computer dry for at least 24 hours. Make sure that it is thoroughly dry before you proceed.
3. If you have a small mini-tower chassis, remove the AGP card brace.
4. Remove all expansion cards installed in the computer except a video expansion card.

NOTE: If your primary hard drive is connected to a drive controller card and not one of the system board EIDE connectors, leave the drive controller card installed in the computer.

5. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

   Does the system have power?

   Yes. Proceed to step 6.

   No. Contact Dell for technical assistance.

6. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
7. Reinstall all expansion cards.
8. If you have a micro tower chassis, replace the AGP card brace.
9. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.
10. Run the **System Board Devices** test group in the Dell Diagnostics.

    Did any of the diagnostics tests fail?

    Yes. Contact Dell for technical assistance.

    No. The problem is resolved.

Repairing a Dropped or Damaged Computer

CAUTION: Before you perform this procedure, see "Safety Information."

Fill out the Diagnostic Checklist as you perform the following steps:

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
2. Check all the expansion-card connections in the computer, and reseat any loose expansion cards.
3. Make sure that all cables are properly connected and that all components are properly seated in their connectors and sockets.
4. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.
5. Run the **System Board Devices** test group in the Dell Diagnostics.

Did any of the diagnostics tests fail?

Yes. Contact Dell for technical assistance.

No. The problem is resolved.

Hardware Conflicts

Hardware conflicts occur when the operating system detects multiple devices that are attempting to operate on the same system resources when those resources cannot be shared between the devices.

Symptoms:

- System hangs or locks up, particularly while using a specific device.
- Memory parity errors occur on parity-enabled systems.
- Noise or other problems from sound cards.
- Unintelligible characters printed on the printer.
- Mouse pointer hangs and will not move or moves in a stuttering fashion.
- Messages stating that the computer is not operating at maximum performance.
- Errors and crashes of applications for no apparent reason.
- Nothing displays on the video monitor.

To resolve hardware conflicts, remove any newly added hardware and contact the hardware manufacturer. Also see your operating system documentation.

System Memory Problems

During POST, the computer checks the computer's memory, determines the amount of installed memory, and then writes to and reads from the number of available bytes to ensure proper operation.

Basic Checks:

- If an insufficient memory message appears, save and close any open files and exit any open application programs not in use.
- Consider installing additional system memory.
- Run the **System Memory** test in the Dell Diagnostics.
- Reseat the memory modules.
- Restart the computer.

If the problem still exists after you complete the basic checks, fill out the Diagnostic Checklist as you perform the following steps.

CAUTION: Before you perform this procedure, see "Safety Information."

1. Reboot the computer.

   Does the RAM count displayed correctly match the actual amount of memory installed in the computer?

   Yes. The computer needed to update the memory count. The problem is resolved.

   No. Go to step 2.

2. Run the **System Memory** test group in the Dell Diagnostics.

   Did any of the diagnostics tests fail?

   Yes. Contact Dell for technical assistance.

   No. Go to step 3.

3. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
4. Rotate the power supply away from the system board.

5. Replace the memory module(s).
6. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

   Does the RAM count displayed correctly match the actual amount of memory installed in the computer?

   Yes. The memory module(s) were defective. The problem is resolved.

   No. Contact Dell for technical assistance.

System Board Problems

A system board problem can result from a defective system board component, a faulty power supply, or a defective component connected to the system board. If an error message indicates a system board problem, fill out the Diagnostic Checklist as you perform the following steps.

⚠ **CAUTION: Before you perform this procedure, see "Safety Information."**

1. Reboot the system and run the **System Board Devices** test group in the Dell Diagnostics.

   Did any of the tests fail?

   Yes. Contact Dell for technical assistance.

   No. Go to step 2.
2. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
3. Make sure the power cables from the power supply are firmly connected to the connectors on the system board.
4. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

   Is the computer working properly?

   Yes. The problem is resolved.

   No. Go to step 5.
5. Perform the procedure in "Expansion Card Problems."

   Is the computer working properly?

   Yes. The problem is resolved.

   No. Go to step 6.
6. Perform the procedure in "Keyboard Problems."

   Is the computer working properly?

   Yes. The problem is resolved.

   No. Go to step 7.
7. Perform the procedure in "Resetting a Damaged System Board."

   Is the computer working properly?

   Yes. The problem is resolved.

   No. Contact Dell for technical assistance.

Resetting a Damaged System Board

If the system cannot boot and you have exhausted all other troubleshooting options, perform the following steps.

⚠ **CAUTION: Before you perform this procedure, see "Safety Information."**

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.

2. If you have a micro tower chassis, remove the AGP card brace.
3. Install a jumper plug on the RTCRST jumper pins and then remove it.
4. Replace the AGP card brace.
5. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

   Is the computer working properly?

   Yes. The problem is resolved.

   No. Contact Dell for technical assistance.

Dell Diagnostics

When to Use the Dell Diagnostics

If you experience a problem with your computer, run the Dell Diagnostics before you call Dell for technical assistance. The Dell Diagnostics tests check your computer's hardware without additional equipment and without the risk of destroying data. When the diagnostics tests complete without indicating any problems, you can have confidence in your computer's operation. If the tests indicate a problem you cannot solve by yourself, the test results provide important information you will need when talking to Dell's service and support personnel.

NOTICE: Only use the Dell Diagnostics to test your Dell computer. Using this program with other computers may cause incorrect computer responses or result in error messages.

Features

The diagnostic test groups features allow you to take the following actions:

- Perform quick checks or extensive tests on one or all devices
- Choose the number of times a test group or subtest is repeated
- Display or print test results or save them in a file
- Suspend testing if an error is detected or terminate testing when an adjustable error limit is reached
- Access online Help screens that describe the tests and tell how to run them
- Read status messages that inform you whether test groups or subtests completed successfully
- Receive error messages that appear if problems are detected

Before You Start Testing

- Read "**Safety Information**."
- Turn on your printer if one is attached, and make sure it is online.
- Enter system setup, confirm your computer's system configuration information, and enable all of its components and devices, such as ports.

Running the Dell Diagnostics

NOTE: Dell recommends that you print these procedures before you begin. For additional information, refer to the Dell OptiPlex User's Guide, located on the Dell OptiPlex ResourceCD.

1. Shut down and restart the computer.
2. Enter system setup.
3. Change the **Boot Sequence** to use the CD drive as the first device in the boot sequence.

NOTE: Write down your current boot sequence in case you want to restore it after running the Dell Diagnostics.

4. Insert the *Dell OptiPlex ResourceCD* into the CD drive.
5. Press <Alt><b> to exit system setup and save your changes.

   The computer reboots and the Dell logo screen appears followed by a list of the available languages.

*NOTE: If you are starting the ResourceCD for the first time on this computer, the **ResourceCD Installation** window opens to inform you that the ResourceCD is about to begin installation. Click **OK** to continue. To complete the installation, respond to the prompts offered by the installation program. If the **Welcome Dell System Owner** screen opens, click **Next** to continue.*

6. Select **Start computer to run Dell Diagnostics**.

7. Select the number for the language that you want.

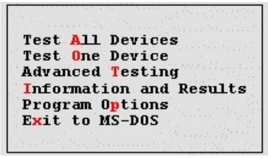
8. A numbered list displays the following options:

   - **Option 1 – Dell Diagnostics** — Loads the Dell Diagnostics that run computer tests

   - **Option 2 – Exit** — Exits the main menu and returns to an MS-DOS prompt.

9. Select **Option 1 — Dell Diagnostics**. After the diagnostics initialize, the Dell Diagnostics main menu appears:

   Dell Diagnostics Main Menu

   - **Test All Devices**: Performs quick or extensive tests on all devices.
   - **Test One Device**: Performs quick or extensive tests on a single device after you select it from a list of device groups. After you select **Test One Device**, press <F1> for more information about a test.
   - **Advanced Testing**: Allows you to modify the parameters of a test, select a group of tests to perform, and access additional information about Advanced Testing.
   - **Information and Results**: Provides test results, test errors, version numbers of subtests, and additional information on the Dell Diagnostics.
   - **Program Options**: Allows you to change the settings of the Dell Diagnostics.
   - **Exit to MS-DOS**: Exits to the MS-DOS prompt.

10. Select the type of tests to perform:

    - To perform a quick check of your computer or a specific device, select **Quick Tests** from the **Test All Devices** or **Test One Device** option.

      Quick Tests runs only the tests that run fast and do not require user interaction. Dell recommends that you choose **Quick Tests** first to increase the odds of tracing the source of the problem quickly.

    - For a thorough check of your computer or to check a particular area of your computer, select **Extended Tests** from the **Test All Devices** or **Test One Device** option.

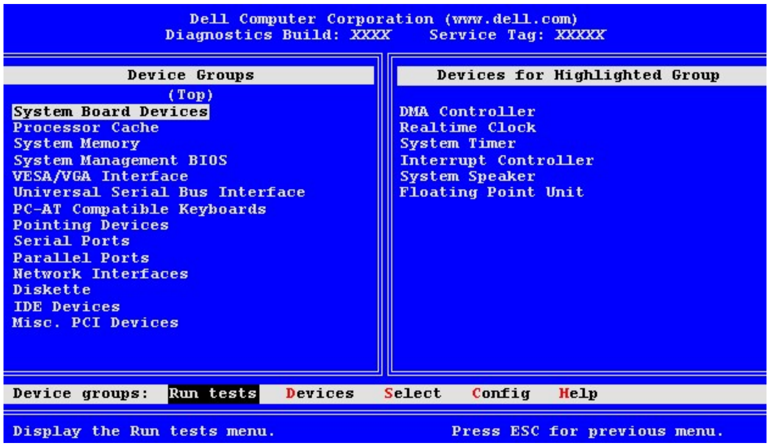
    - To customize your test(s), select the **Advanced Testing** option.

11. Remove the *ResourceCD* from the CD drive when you have finished running the Dell Diagnostics.

12. Enter system setup and change the **Boot Sequence** to your original configuration.

Advanced Testing

When you select **Advanced Testing** from the Diagnostics Menu, the following screen appears:



NOTE: The groups and devices listed in your screen can vary somewhat based on the components installed in your computer.

Information in the **Advanced Testing** screen is presented as follows:

- **Device Groups** — lists the diagnostic test groups in the order they will run if you select **All** from the **Run tests** menu option.

  To select a test device group, press the up- or down-arrow key to highlight the group.

*NOTE: The diagnostics may not list in the **Device Groups** area the names of all components or devices that are part of your computer system. For example, it may not list a printer even though it is connected to your computer. However, the parallel port to which the printer is connected appears in the **Device Groups** list. You can test your printer connection in the **Parallel Ports** tests.*

- **Devices for Highlighted Group** — lists the computer's current hardware.
- **Device groups menu bar** — contains the options **Run tests**, **Devices**, **Select**, **Config**, and **Help.**

  To select a menu option, press the left- or right-arrow key to highlight the option and press <Enter>, or press the key that corresponds to the highlighted letter in the category title.

NOTE: The options displayed on your screen should reflect the hardware configuration of your computer.

Advanced Testing Help Menu

The **Help** options and a description of their functions are presented in the following table.

Help Option	Description
Menu	Describes the **Advanced Testing** screen, the **Device Groups**, and the diagnostic menus and commands and gives instructions on how to use them
Keys	Explains the functions of all keystrokes that can be used in the Dell Diagnostics
Device Group	Describes the highlighted group in the **Device Groups** list on the main menu and provides reasons for using certain tests
Device	Describes the highlighted device in the **Device Groups** list on the **Advanced Testing** screen
Test	Describes the test procedure for each highlighted test group subtest
Versions	Lists the version numbers of the subtests

Messages and Codes

Your application programs, operating system, and the computer itself are capable of identifying problems and alerting you to them. When a problem occurs, a message may appear on your monitor screen or a beep code may sound. See "System Messages" or "System Beep Codes" for information about each message or beep code.

System Messages

If you receive a system message, see the table below for suggestions on resolving any problems indicated by the message. The system messages are listed alphabetically.

NOTE: If the system message you received is not listed in the table, check the documentation for the application program that you were running at the time the message appeared and/or the operating system documentation for an explanation of the message and a recommended action.

Table 1. System Messages

Message	Cause	Action
`Address mark not found`	The basic input/output system (BIOS) found a faulty disk sector or could not find a particular disk sector.	See "Drive Problems."
`Alert! Previous attempts at booting this system have failed at checkpoint [`*nnnn*`]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support.`	The system has failed to complete the boot routine three consecutive times for the same error.	See "Getting Help" for instructions on obtaining technical assistance, and report the checkpoint code (*nnnn*) to the support technician.
`Attachment failed to respond`	The diskette drive or hard drive controller cannot send data to the associated drive.	See "Drive Problems."
`Bad command or file name`	The command for file name you entered does not exist or is not in the pathname you specified.	Make sure you have spelled the command correctly, placed spaces in the proper location, and used the correct pathname.
`Bad error-correction code (ECC) on disk read`	The diskette drive or hard drive controller detected an uncorrectable read error.	See "Drive Problems."
`Controller has failed`	The hard drive or the associated controller is defective.	See "Drive Problems."
`Data error`	The diskette or hard drive cannot read the data.	Run the chkdsk utility in the Microsoft Windows operating system to check the file structure of the diskette or hard drive. See your operating system documentation for more information. If you are using another operating system, run the appropriate utility to check the file structure of the diskette or hard drive. See your operating system documentation.
`Decreasing available memory`	One or more dual in-line memory modules (DIMMs) may be faulty or improperly seated.	See "System Memory Problems."
`Diskette drive 0 seek failure` `Diskette drive 1 seek failure`	A cable may be loose, or the system configuration information may not match the hardware configuration.	See "Drive Problems."
`Diskette read failure`	A cable may be loose, or the diskette may be faulty.	See "Drive Problems."
`Diskette subsystem reset failed`	The diskette drive controller may be faulty.	Run the **Diskette** tests in the Dell Diagnostics.
`Drive not ready`	No diskette is in the drive. The operation requires a diskette in the drive before it can continue.	Put a diskette in the drive or close the drive latch.
`Diskette write protected`	The diskette write-protect feature is activated.	Remove the diskette from drive A, and move the write-protect tab to the unlocked position.
`Gate A20 failure`	One or more DIMMs may be loose.	See "System Memory Problems."
`General failure`	The operating system is unable to carry out the command.	This message is usually followed by specific information—for example, `PRINTER OUT OF PAPER`. Respond by taking the appropriate action.
`Hard disk configuration error`	The hard drive failed initialization.	See "Drive Problems."
`Hard disk controller failure` `Hard disk failure` `Hard-disk drive read failure`	The hard drive failed initialization.	See "Drive Problems."

`Invalid configuration information - please run SETUP program`	The system configuration information does not match the hardware configuration.	Enter system setup and correct the system configuration information.
`Keyboard clock line failure` `Keyboard controller failure` `Keyboard data line failure` `Keyboard failure` `Keyboard stuck key failure`	A cable or connector may be loose, or the keyboard or keyboard/mouse controller may be faulty.	See "Keyboard Problems."
`Memory address line failure at` *address*`, read` *value* `expecting` *value*	One or more DIMMs may be faulty or improperly seated.	See "System Memory Problems."
`Memory allocation error`	The software you are attempting to run is conflicting with the operating system or another application program or utility.	Turn off the computer, wait 30 seconds, and then turn it on. Try to run the program again. If the problem persists, contact the software company.
`Memory data line failure at` *address*`, read` *value* `expecting` *value* `Memory double word logic failure at` *address*`, read` *value* `expecting` *value* `Memory odd/even logic failure at` *address*`, read` *value* `expecting` *value* `Memory write/read failure at` *address*`, read` *value* `expecting` *value*	One or more DIMMs may be faulty or improperly seated.	See "System Memory Problems."
`Memory size in CMOS invalid`	The amount of memory recorded in the system configuration information does not match the memory installed in the computer.	Reboot the computer. If the error appears again, see "Getting Help" for instructions on obtaining technical assistance.
`Memory tests terminated by keystroke`	The memory test was not completed.	Rerun the memory test.
`No boot device available`	The computer cannot find the diskette or hard drive.	Enter system setup, check the system configuration information for the diskette and hard drive, and, if necessary, correct the information.
`No boot sector on hard-disk drive`	The system configuration information in system setup may be incorrect, or the operating system may be corrupted.	Enter system setup, check the system configuration information for the hard drive, and if necessary, correct the information. If the problem persists, reinstall your operating system. See the documentation that came with your operating system.
`No timer tick interrupt`	A chip on the system board might be malfunctioning.	Run the **System Board Devices** tests in the Dell Diagnostics.
`Non-system disk or disk error`	The diskette in drive A or your hard drive does not have a bootable operating system installed on it.	A nonbootable diskette is in drive A. Either replace the diskette with one that has a bootable operating system, or remove the diskette from drive A and restart the computer.
`Not a boot diskette`	There is no operating system on the diskette.	Boot the computer with a diskette that contains an operating system.
`Plug and Play Configuration Error`	The system has encountered a problem in trying to configure one or more expansion cards.	Turn your system off and unplug it. Remove all but one of the cards. Plug in your system and reboot it. If the problem persists, the expansion card may be malfunctioning. If the message does not reappear, turn off the power and reinsert one of the other cards. Repeat this process until you identify the malfunctioning card.
`Read fault` `Requested sector not found`	The operating system cannot read from the diskette or hard drive. The system could not find a particular	See "Drive Problems."

	sector on the disk, or the requested sector is defective.	
`Reset failed`	The disk reset operation failed.	See "Drive Problems."
`Sector not found`	The operating system is unable to locate a sector on the diskette or hard drive.	See "Drive Problems."
`Seek error`	The operating system is unable to find a specific track on the diskette or hard drive.	If the error is on the diskette drive, try another diskette in the drive.
`Shutdown failure`	A chip on the system board might be malfunctioning.	Run the **System Board Devices** tests in the Dell Diagnostics.
`Time-of-day clock stopped`	The battery may be dead.	Enter system setup and correct the date or time. If the problem persists, see "Battery Problems."
`Time-of-day not set`	The time or date displayed in the system configuration information does not match the system clock.	Enter system setup and correct the date or time.
`Timer chip counter 2 failed`	A chip on the system board might be malfunctioning.	Run the **System Board Devices** tests in the Dell Diagnostics.
`Unexpected interrupt in protected mode`	The keyboard controller may be malfunctioning, or one or more DIMMs may be loose.	Run the **System Memory** and the **Keyboard** tests in the Dell Diagnostics.
`WARNING: Dell's Disk Monitoring System has detected that drive [0/1] on the [primary/secondary] EIDE controller is operating outside of normal specifications. It is advisable to immediately back up your data and replace your hard-disk drive by calling your support desk or Dell.`	Power-on self-test (POST) has queried the enhanced integrated drive electronics (EIDE) drive for status information. The drive has returned a parameter from the call that indicates it has detected possible error conditions for its operating specifications.	Once your computer finishes booting, immediately back up your data and replace your hard drive. Restore the data to the replaced drive. If a replacement drive is not immediately available and the drive is not the only bootable drive, enter system setup and change the appropriate drive setting to None. Remove the drive from the system. This should be done only after you have backed up the data.
`Write fault` `Write fault on selected drive`	The operating system cannot write to the diskette or hard drive.	See "Drive Problems."

System Beep Codes

When errors occur during a boot routine that cannot be reported on the monitor, your computer may emit a series of beeps that identify the problem. The beep code is a pattern of sounds: for example, one beep, followed by a second beep, and then a burst of three beeps (code 1-1-3) means that the computer was unable to read the data in nonvolatile random-access memory (NVRAM). This information is invaluable to the Dell support staff if you need to call for technical assistance.

When a beep code is emitted, write it down on a copy of the Diagnostics Checklist found in "Getting Help," and then look it up in Table 2. If you are unable to resolve the problem by looking up the meaning of the beep code, use the Dell Diagnostics to identify a more serious cause. If you are still unable to resolve the problem, see "Getting Help" for instructions on obtaining technical assistance.

Table 2. System Beep Codes

Code	Cause	Action
1-1-2	Microprocessor register failure	See "Getting Help" for instructions on obtaining technical assistance.
1-1-3	NVRAM	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
1-1-4	ROM BIOS checksum failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
1-2-1	Programmable interval timer	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
1-2-2	Direct memory access (DMA) initialization failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
1-2-3	DMA page register read/write failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
1-3	Video Memory Test failure	Run the **VESA/VGA Interface** tests in the Dell Diagnostics.
1-3-1 through 2-4-4	DIMMs not being properly identified or used	See "System Memory Problems."

3-1-1	Slave DMA register failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
3-1-2	Master DMA register failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
3-1-3	Master interrupt mask register failure	See "Getting Help" for instructions on obtaining technical assistance.
3-1-4	Slave interrupt mask register failure	See "Getting Help" for instructions on obtaining technical assistance.
3-2-2	Interrupt vector loading failure	See "Getting Help" for instructions on obtaining technical assistance.
3-2-4	Keyboard Controller Test failure	Run the **Keyboard** tests in the Dell Diagnostics. Otherwise, see "Getting Help" for instructions on obtaining technical assistance.
3-3-1	NVRAM power loss	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
3-3-2	NVRAM configuration	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
3-3-4	Video Memory Test failure	Run the **VESA/VGA Interface** tests in the Dell Diagnostics.
3-4-1	Screen initialization failure	Run the **VESA/VGA Interface** tests in the Dell Diagnostics.
3-4-2	Screen retrace failure	Run the **VESA/VGA Interface** tests in the Dell Diagnostics.
3-4-3	Search for video ROM failure	Run the **VESA/VGA Interface** tests in the Dell Diagnostics.
4-2-1	No time tick	See "Getting Help" for instructions on obtaining technical assistance.
4-2-2	Shutdown failure	See "Getting Help" for instructions on obtaining technical assistance.
4-2-3	Gate A20 failure	See "Getting Help" for instructions on obtaining technical assistance.
4-2-4	Unexpected interrupt in protected mode	See "Getting Help" for instructions on obtaining technical assistance.
4-3-1	Memory failure above address 0FFFFh	Run the **System Memory** tests in the Dell Diagnostics.
4-3-3	Timer-chip counter 2 failure	See "Getting Help" for instructions on obtaining technical assistance.
4-3-4	Time-of-day clock stopped	See "Getting Help" for instructions on obtaining technical assistance.
4-4-1	Serial or parallel port test failure	Run the **Serial Ports** and the **Parallel Ports** tests in the Dell Diagnostics.
4-4-2	Failure to decompress code to shadowed memory	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
4-4-3	Math-coprocessor test failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.
4-4-4	Cache test failure	Run the **System Board Devices** tests in the Dell Diagnostics, if possible.

Warning Messages

A warning message alerts you to a possible problem and asks you to do something before execution continues. For example, before you format a diskette, a message may warn you that you may lose all data on the diskette as a way to protect against inadvertently erasing or writing over the data. These warning messages usually interrupt the procedure and require you to respond by typing *y* (yes) or *n* (no).

NOTE: Warning messages are generated by either your application programs or your operating system. See "Software Problems" and the documentation that accompanied your operating system and application programs.

Diagnostics Messages

When you run a test group or subtest in the Dell Diagnostics, an error message may result. These particular error messages are not covered in this section. Record the message on a copy of the Diagnostics Checklist found in "Getting Help." Also see "Getting Help" for instructions on obtaining technical assistance.

Diagnostic LEDs

Should your system fail to operate, light-emitting diodes (LEDs) on the front panel and back panel of the chassis provide diagnostic codes that can help you troubleshoot a system problem. The following sections describe the meaning of the diagnostic codes.

CAUTION: Before servicing any components inside your computer, see "Safety Information."

Front Panel LED

Table 3 lists the codes for the front panel diagnostic LED, gives their probable causes, and offers suggested corrective actions.

Table 3. Power Switch Diagnostic LED Codes

Power LED Code	Cause	Action

Blinking yellow	The system power supply may have failed.	See "Getting Help" for instructions on obtaining technical assistance.
Solid yellow	A device on the system board may be faulty or is incorrectly installed.	Be sure that each microprocessor is properly seated, remove all expansion cards, and then reboot. If the system does not boot, see "Getting Help" for instructions on obtaining technical assistance.
Solid green *and a beep code* during POST	A problem was detected while the BIOS was executing.	See Table 2 for instructions on diagnosing the beep code.
Solid green power indicator *with no beep code and no video* during POST	The monitor or the graphics card may be faulty.	See "Video and Monitor Problems ." If the monitor is operating properly and is correctly connected, see "Getting Help" for instructions on obtaining technical assistance.
Solid green power indicator *and no beep code but the system locks up during POST*	An integrated system board device may be faulty.	See "Getting Help" for instructions on obtaining technical assistance.

Back Panel LEDs

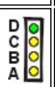
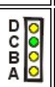
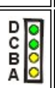
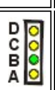
When you turn on your system, it performs a power-on self-test (POST), which is a series of self-diagnostic checks. A successful POST ends with a single beep that signifies the start of normal operation. If the system fails to emit the single beep or appears to stop responding during POST, a series of LEDs located at the rear of the computer can help you understand which POST test failed or why the system stopped responding. These LEDs indicate problems encountered during POST only, not during normal operation.

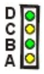
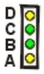
CAUTION: Before servicing any components inside your computer, see "Safety Information."

The LED patterns described in Table 4 can help you determine what to do to resolve the problem. If a problem resolution requires you to open the computer chassis, refer to "Finding Solutions" for procedures you need to complete prior to performing the suggested resolution. If the problem persists after you perform the suggested problem resolution(s), contact Dell Technical Assistance for further help.

Table 4 lists the codes for the back panel diagnostic LEDs, gives their probable causes, and offers suggested corrective actions. The LED patterns are shown as they appear on the back of the desktop chassis (vertical position).

Table 4. Back Panel Diagnostic LED Codes

LED pattern		Problem Description	Suggested Resolution
	off off off off	Normal off condition or possible pre-BIOS failure	Verify that the system is plugged into a working outlet and that you have pressed the power button.
	green yellow yellow yellow	Possible BIOS failure; the system is in the recovery mode	Run the BIOS Recovery Utility, wait for recovery completion, and restart the system to retest.
	yellow green yellow yellow	Possible processor failure	Reseat the processor(s) and the terminator card (if present), and restart the system to retest.
	green green yellow yellow	Possible memory failure	Reseat all DIMMs and restart the system to retest.
	yellow yellow green yellow	Possible expansion card failure	Remove each expansion card individually, and restart the system to retest. Reinstall the expansion card(s) one at a time, and restart the system to retest. Move each expansion card one at a time to another PCI slot, and restart the system to retest.

	green yellow green yellow	Possible video card failure or bad on-board video	If you have a video card, reseat it and restart the system to retest. If you have video integrated, you must replace the system board.
	yellow green green yellow	Possible diskette or hard drive failure	Reseat all power and data cables, and restart the system to retest.
	green green green yellow	Possible USB failure	Reseat all USB devices and cables, and restart the system to retest.
	yellow green green green	Other failure	Contact Dell for technical assistance.
	green green green green	Normal operating condition after POST	None.

Software Problems

This section provides general guidelines for analyzing software problems. For detailed troubleshooting information on a particular program, see the documentation that accompanied the software or consult the support service for the software.

If your system is behaving erratically, back up your files immediately, then see your operating system documentation for information on backing up data files.

Basic Checks:

- Ensure that the application program is compatible with the operating system installed in your computer and that your computer meets the minimum hardware requirements needed to run the software.
- Ensure that you properly installed and configured the application program. Reinstall the program if necessary.
- Consult the software documentation or contact the software manufacturer for detailed troubleshooting information on a particular application program.
- Ensure that you have not made an error while entering data.
- Make sure that problems are not caused by a virus — Use a virus-scanning application program to check the diskettes or CDs.
- Verify that the program’s device drivers do not conflict with certain application programs.
- Confirm that a problem is software-related by running the System Board Devices tests in the Dell Diagnostics. If all tests run successfully, the error condition may be related to a software problem.
- Ensure that the use of terminate-and-stay-resident (TSR) programs has not resulted in a memory conflict.
- Remove or confirm the possibility of a program conflict by rebooting your computer system.
- Make sure that a hardware conflict does not exist between devices.

Operating System Compatibility

Make sure the computer's operating environment is set up to accommodate the application programs you use. Whenever you change the operating environment parameters, you may also affect the successful operation of the application programs. Sometimes, after modifying the operating environment, you may need to reinstall a program that no longer runs properly.

Input Errors

If a specific key or set of keys is pressed at the wrong time, a program may give you unexpected results. See the documentation that came with your application program to make sure the values or characters you are entering are valid.

Error Messages

Error messages can be produced by an application program, the operating system, or the computer. "Messages and Codes" discusses the error messages that are generated by the system. If you receive an error message that is not listed in "Messages and Codes," check your operating system or application program documentation.

Device Drivers

Programs that use specialized subroutines called *device drivers* can also cause problems with your system. For example, a variation in the way the data is sent to the monitor may require a special screen driver program that expects a certain kind of video mode or monitor. In such cases, you may have to develop an alternative method of running that particular program—the creation of a boot file made especially for that program, for example. Call the support service for the software you are using to help you with this problem.

Memory-Resident Programs

Many utilities and supplementary programs load either when the computer boots or from an operating system prompt. These programs are designed to stay resident in system memory and thus always be available for use. Because they remain in the computer's memory, memory conflicts and errors can result when other programs require use of all or part of the memory already occupied by these TSR programs.

Typically, your operating system's start-up files (such as **config.sys** and **autoexec.bat**) contain commands to start TSR programs when you boot your system. If you suspect that one of these TSR programs is causing a memory conflict, remove the commands that start them from the start-up files. If the problem you were experiencing does not recur, one of the TSR programs probably created the conflict. Add the TSR commands back into the start-up files one at a time until you identify which TSR program is creating the conflict.

Program Conflicts

Some programs may leave portions of their setup information behind, even though you have exited from them. As a result, other programs cannot run. Rebooting your system can confirm whether or not these programs are the cause of the problem.

Memory Address Conflicts

Memory address conflicts occur when two or more devices try to access the same address in the upper memory blocks (UMB). For example, if a network expansion card and an expanded-memory page frame are assigned an overlapping block of addresses, a memory address conflict arises. As a result, when you try to log in to the network, the operation fails.

To resolve this type of conflict, you can change the address of one of the devices. For example, in the case of the network expansion card and expanded-memory page frame address conflict, you can move the network card to an address block in the range of CC000h through D0000h. To reassign the expansion card's address block, refer to the documentation for the card.

Interrupt Assignment Conflicts

Problems can arise if two devices attempt to use the same interrupt request (IRQ) line. To avoid this type of conflict, check the documentation for the default IRQ-line setting for each installed expansion card. Then consult the following table to configure the card for one of the available IRQ lines.

NOTE: Table 1 lists default IRQ settings. In systems with Plug and Play capabilities, you can modify the default settings. If you install a Plug and Play card in a Plug and Play system, the system automatically selects an open IRQ line if any are available.

Table 5. Default IRQ Line Assignments

IRQ Line	Used/Available
IRQ0	Used by the system timer
IRQ1	Used by the keyboard to signal that the output buffer is full
IRQ2	Used by interrupt controller 1 to enable IRQ8 through IRQ15
IRQ3	Used by serial port 2
IRQ4	Used by serial port 1
IRQ5	Available
IRQ6	Used by the diskette controller
IRQ7	Used by the parallel port
IRQ8	Used by the real-time clock (RTC)
IRQ9	Used by the video graphics array (VGA) interface (optional)
IRQ10	Available
IRQ11	Available
IRQ12	Used by the mouse port
IRQ13	Used by the math coprocessor (if applicable)
IRQ14	Used by the primary integrated drive electronics (IDE) controller
IRQ15	Used by the secondary IDE controller

BIOS Recovery Utility

If your system loses power and beeps constantly but does not boot when power is restored, the basic input/output system (BIOS) is probably corrupted. To restore the BIOS, perform the following steps:

1. Disconnect the system from its power source.
2. Go to another working system, and download the BIOS flash executable utility for the system from the **File Library** located on Dell's **support.dell.com** website.
3. On the working system, go to an MS-DOS prompt and type the command `xxxxx -writehdrfile` (where `xxxxx` is the name of the BIOS flash executable utility you downloaded).

   Running this utility generates a file with an **.hdr** extension.
4. Copy the **.hdr** file to a diskette.
5. Insert the diskette into the diskette drive of the corrupted system and turn it on.

   The system automatically flashes the BIOS from the diskette.
6. When the system begins to restart and the Dell logo screen appears, remove the diskette from the diskette drive so that the system does not boot from the diskette again.

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Regulatory Notices: Dell OptiPlex GX150 System User's Guide

Overview

Electromagnetic Interference (EMI) is any signal or emission, radiated in free space or conducted along power or signal leads, that endangers the functioning of a radio navigation or other safety service or seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include but are not limited to AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pager, and Personal Communication Services (PCS). These licensed services, along with unintentional radiators such as digital devices, including computer systems, contribute to the electromagnetic environment.

Electromagnetic Compatibility (EMC) is the ability of items of electronic equipment to function properly together in the electronic environment. While this computer system has been designed and determined to be compliant with regulatory agency limits for EMI, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that the computer and the receiver are on different branch circuits.

If necessary, consult a Dell Technical Support representative or an experienced radio/television technician for additional suggestions.

Dell computer systems are designed, tested, and classified for their intended electromagnetic environment. These electromagnetic environment classifications generally refer to the following harmonized definitions:

- Class A is typically for business or industrial environments.
- Class B is typically for residential environments.

Information Technology Equipment (ITE), including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, that are integrated into or connected to the system should match the electromagnetic environment classification of the computer system.

A Notice About Shielded Signal Cables: Use only shielded cables for connecting peripherals to any Dell device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment. For parallel printers, a cable is available from Dell. If you prefer, you can order a cable from Dell on the World Wide Web at accessories.us.dell.com/sna/segmenter.asp.

Most Dell computer systems are classified for Class B environments. However, the inclusion of certain options can change the rating of some configurations to Class A. To determine the electromagnetic classification for your system or device, refer to the following sections specific for each regulatory agency. Each section provides country-specific EMC/EMI or product safety information.

FCC Notices (U.S. Only)

Most Dell computer systems are classified by the Federal Communications Commission (FCC) as Class B digital devices. To determine which classification applies to your computer system, examine all FCC registration labels located on the bottom or back panel of your computer, on card-mounting brackets, and on the cards themselves. If any one of the labels carries a Class A rating, your entire system is considered to be a Class A digital device. If all labels carry an FCC Class B rating as distinguished by either an FCC ID number or the FCC logo (FC), your system is considered to be a Class B digital device.

Once you have determined your system's FCC classification, read the appropriate FCC notice. Note that FCC regulations provide that changes or modifications not expressly approved by Dell could void your authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Class A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Class B

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The following information is provided on the device or devices covered in this document in compliance with FCC regulations:

- Model number: DHS, DHP, and DHM
- Company name:

  Dell Computer Corporation
  One Dell Way
  Round Rock, Texas 78682 USA
  (512) 338-4400

IC Notice (Canada Only)

Most Dell computer systems (and other Dell digital apparatus) are classified by the Industry Canada (IC) Interference-Causing Equipment Standard #3 (ICES-003) as Class B digital devices. To determine which classification (Class A or B) applies to your computer system (or other Dell digital apparatus), examine all registration labels located on the bottom or the back panel of your computer (or other digital apparatus). A statement in the form of "IC Class A ICES-003" or "IC Class B ICES-003" will be located on one of these labels. Note that Industry Canada regulations provide that changes or modifications not expressly approved by Dell could void your authority to operate this equipment.

This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B (ou Classe A, si ainsi indiqué sur l'étiquette d'enregistration) respecte toutes les exigences du Reglement sur le Materiel Brouilleur du Canada.

CE Notice (European Union)

Marking by the symbol CE indicates compliance of this Dell system to the EMC Directive and the Low Voltage Directive of the European Union. Such marking is indicative that this Dell system meets the following set of technical standards:

- EN 55022 — "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment."
- EN 55024 — "Information technology equipment - Immunity characteristics - Limits and methods of measurement."
- EN 61000-3-2 — "Electromagnetic compatibility (EMC) - Part 3: Limits - Section 2: Limits for harmonic current emissions (Equipment input current up to and including 16 A per phase)."
- EN 61000-3-3 — "Electromagnetic compatibility (EMC) - Part 3: Limits - Section 3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to and including 16 A."

- EN 60950 — "Safety of Information Technology Equipment."

NOTE: EN 55022 emissions requirements provide for two classifications:

- *Class A is for typical commercial areas.*
- *Class B is for typical domestic areas.*

RF INTERFERENCE WARNING: This is a Class A product. In a domestic environment this product may cause radio frequency (RF) interference, in which case the user may be required to take adequate measures.

This Dell device is classified for use in a typical Class B domestic environment.

A "Declaration of Conformity" in accordance with the preceding directives and standards has been made and is on file at Dell Computer Corporation Products Europe BV, Limerick, Ireland.

Battery Disposal

Your computer system uses a lithium battery. The lithium battery is a long-life battery, and it is very possible that you will never need to replace it. However, should you need to replace it, refer to the section about replacing the battery in your Dell system documentation for instructions.

Do not dispose of the battery along with household waste. Contact your local waste disposal agency for the address of the nearest battery deposit site.

ENERGY STAR® Compliance

Certain configurations of Dell™ computers comply with the requirements set forth by the Environmental Protection Agency (EPA) for energy-efficient computers. If the front panel of your computer bears the ENERGY STAR® Emblem, your original configuration complies with these requirements and all ENERGY STAR® power management features of the computer are enabled.

NOTE: Any Dell computer bearing the ENERGY STAR Emblem is certified to comply with EPA ENERGY STAR requirements as configured when shipped by Dell. Any changes you make to this configuration (such as installing additional expansion cards or drives) may increase the computer's power consumption beyond the limits set by the EPA's ENERGY STAR Computers program.

ENERGY STAR Emblem

The EPA's ENERGY STAR Computers program is a joint effort between the EPA and computer manufacturers to reduce air pollution by promoting energy-efficient computer products. The EPA estimates that use of ENERGY STAR computer products can save computer users up to two billion dollars annually in electricity costs. In turn, this reduction in electricity usage can reduce emissions of carbon dioxide, the gas primarily responsible for the greenhouse effect, and sulfur dioxide and nitrogen oxides, the primary causes of acid rain.

You can also help reduce electricity usage and its side effects by turning off your computer when it is not in use for extended periods of time, particularly at night and on weekends.

CCIB Notice (China Only)

On Class A systems, the following warning will appear near the regulatory label:

WARNING: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其干扰采取切实可行的措施。

EN 55022 Compliance (Czech Republic Only)

This device belongs to Class B devices as described in EN 55022, unless it is specifically stated that it is a Class A device on the specification label. The following applies to devices in Class A of EN 55022 (radius of protection up to 30 meters). The user of the device is obliged to take all

steps necessary to remove sources of interference to telecommunication or other devices.

Pokud není na typovém štitku počítače uvedeno, že spadá do třídy A podle EN 55022, spadá automaticky do třídy B podle EN 55022. Pro zařízení zařazená do třídy A (ochranné pásmo 30m) podle EN 55022 platí následující. Dojde-li k rušení telekomunikačních nebo jiných zařízení, je uživatel povinen provést taková opatření, aby rušení odstranil.

VCCI Notice (Japan Only)

Most Dell computer systems are classified by the Voluntary Control Council for Interference (VCCI) as Class B information technology equipment (ITE). However, the inclusion of certain options can change the rating of some configurations to Class A. ITE, including peripherals, expansion cards, printers, input/output (I/O) devices, monitors, and so on, integrated into or connected to the system, should match the electromagnetic environment classification (Class A or B) of the computer system.

To determine which classification applies to your computer system, examine the regulatory labels/markings (see Figure 1 and Figure 2) located on the bottom or back panel of your computer. Once you have determined your system's VCCI classification, read the appropriate VCCI notice.

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会(VCCI)の
基準に基づくクラス A 情報技術装置です。この装置を家庭環境で
使用すると電波妨害を引き起こすことがあります。この場合には
使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Figure 1. VCCI Class A ITE Regulatory Mark

VCCI-A

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会(VCCI)の
基準に基づくクラス B 情報技術装置です。この装置は家庭環境で
使用することを目的としていますが、ラジオやテレビジョン受信機
に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをしてください。

This is a Class B product based on the standard of the Voluntary Control Council for Interference (VCCI) for information technology equipment. If this equipment is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Figure 2. VCCI Class B ITE Regulatory Mark

MIC Notice (Republic of Korea Only)

To determine which classification (Class A or B) applies to your computer system (or other Dell digital device), examine the Republic of Korean Ministry of Information and Communications (MIC) registration labels located on your computer (or other Dell digital device). The MIC label may be located separately from the other regulatory marking applied to your product. Line three of the label identifies the emissions class for the product—"(A)" for Class A products or "(B)" for Class B products.

NOTE: MIC emissions requirements provide for two classifications:

- Class A devices are for business purposes.
- Class B devices are for nonbusiness purposes.

Class A Device

기 종 별	사 용 자 안 내 문
A급 기기 (업무용 정보통신기기)	이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find that this device is not suitable for your use, you may exchange it for a nonbusiness-purpose device.

MIC Class A Regulatory Label

1. 기기의 명칭(모델명):
2. 인증번호:(A)
3. 인증받은 자의 상호:
4. 제조년월일:
5. 제조자/제조국가:

Class B Device

기종별	사용자 안내문
B급 기기 (가정용 정보통신기기)	이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

Please note that this device has been approved for nonbusiness purposes and may be used in any environment, including residential areas.

MIC Class B Regulatory Label

1. 기기의 명칭(모델명):
2. 인증번호:(B)
3. 인증받은 자의 상호:
4. 제조년월일:
5. 제조자/제조국가:

Polish Center for Testing and Certification Notice

The equipment should draw power from a socket with an attached protection circuit (a three-prong socket). All equipment that works together (computer, monitor, printer, and so on) should have the same power supply source.

The phasing conductor of the room's electrical installation should have a reserve short-circuit protection device in the form of a fuse with a nominal value no larger than 16 amperes (A).

To completely switch off the equipment, the power supply cable must be removed from the power supply socket, which should be located near the equipment and easily accessible.

A protection mark "B" confirms that the equipment is in compliance with the protection usage requirements of standards PN-93/T-42107 and PN-EN 55022: 1996.

Wymagania Polskiego Centrum Badań i Certyfikacji

Urządzenie powinno być zasilane z gniazda z przyłączonym obwodem ochronnym (gniazdo z kołkiem). Współpracujące ze sobą urządzenia (komputer, monitor, drukarka) powinny być zasilane z tego samego źródła.

Instalacja elektryczna pomieszczenia powinna zawierać w przewodzie fazowym rezerwową ochronę przed zwarciami, w postaci bezpiecznika o wartości znamionowej nie większej niż 16A (amperów).

W celu całkowitego wyłączenia urządzenia z sieci zasilania, należy wyjąć wtyczkę ka bla zasilającego z gniazdka, które powinno znajdować się w pobliżu urządzenia i być łatwo dostępne.

Znak bezpieczeństwa "B" potwierdza zgodność urządzenia z wymaganiami bezpieczeństwa użytkowania zawartymi w PN-93/T-42107 i PN-EN 55022:1996.

Jeżeli na tabliczce znamionowej umieszczono informację, że urządzenie jest klasy A, to oznacza to, że urządzenie w środowisku mieszkalnym może powodować zakłócenia radioelektryczne. W takich przypadkach można żądać od jego użytkownika zastosowania odpowiednich środków zaradczych.

Pozostałe instrukcje bezpieczeństwa

- Nie należy używać wtyczek adapterowych lub usuwać kołka obwodu ochronnego z wtyczki. Jeżeli konieczne jest użycie przedłużacza to należy użyć przedłużacza 3-żyłowego z prawidłowo połączonym przewodem ochronnym.
- System komputerowy należy zabezpieczyć przed nagłymi, chwilowymi wzrostami lub spadkami napięcia, używając eliminatora przepięć, urządzenia dopasowującego lub bezzakłóceniowego źródła zasilania.
- Należy upewnić się, aby nic nie leżało na kablach systemu komputerowego, oraz aby kable nie były umieszczone w miejscu, gdzie można byłoby na nie nadeptywać lub potykać się o nie.
- Nie należy rozlewać napojów ani innych płynów na system komputerowy.
- Nie należy wpychać żadnych przedmiotów do otworów systemu komputerowego, gdyż może to spowodować pożar lub porażenie prądem, poprzez zwarcie elementów wewnętrznych.
- System komputerowy powinien znajdować się z dala od grzejników i źródeł ciepła. Ponadto, nie należy blokować otworów wentylacyjnych. Należy unikać kładzenia luźnych papierów pod komputer oraz umieszczania komputera w ciasnym miejscu bez możliwości cyrkulacji powietrza wokół niego.

NOM Information (Mexico Only)

The following information is provided on the device(s) described in this document in compliance with the requirements of the official Mexican standards (NOM):

Exporter:	Dell One Dell Way Round Rock, TX 78682
Importer:	Dell Computer de México, S.A. de C.V. Paseo de la Reforma 2620 - 11° Piso Col. Lomas Altas 11950 México, D.F.
Ship to:	Dell Computer de México, S.A. de C.V. al Cuidado de Kuehne & Nagel de México S. de R.I. Avenida Soles No. 55 Col. Peñon de los Baños 15520 México, D.F.
Supply voltage:	115/230 VAC
Frequency:	60/50 Hz
Input current rating:	DHS — 2.0/1.0 A DHP — 1.5/0.75 A DHM — 3.0/1.5 A

BSMI Notice (Taiwan Only)

BSMI 通告（僅限於台灣）

大多數的 Dell 電腦系統被 BSMI(經濟部標準檢驗局)劃分爲乙類數位裝置。但是，使用某些選件會使有些組態的等級變成甲類。若要確定您的電腦系統適用等級，請檢查所有位於電腦底部或背面板、擴充卡安裝托架，以及擴充卡上的 BSMI 註冊標籤。如果其中有一甲類標籤，即表示您的系統爲甲類數位裝置。如果只有 BSMI 的檢磁號碼標籤，則表示您的系統爲乙類數位裝置。

一旦確定了系統的 BSMI 等級，請閱讀相關的 BSMI 通告。請注意，BSMI 通告規定凡是未經 Dell Computer Corporation 明確批准的擅自變更或修改，將導致您失去此設備的使用權。

此裝置符合 BSMI(經濟部標準檢驗局)的規定，使用時須符合以下兩項條件：
・此裝置不會產生有害干擾。
・此裝置必須能接受所接收到的干擾，包括可能導致無法正常作業的干擾。

甲類

此設備經測試證明符合 BSMI(經濟部標準檢驗局)之甲類數位裝置的限制規定。這些限制的目的是爲了在商業環境中使用此設備時，能提供合理的保護以防止有害的干擾。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。請勿在住宅區使用此設備。

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

乙類

此設備經測試證明符合 BSMI(經濟部標準檢驗局)之乙類數位裝置的限制規定。這些限制的目的是爲了在住宅區安裝時，能防止有害的干擾，提供合理的保護。此設備會產生、使用並散發射頻能量；如果未遵照製造廠商的指導手冊來安裝和使用，可能會干擾無線電通訊。但是，這並不保證在個別的安裝中不會產生干擾。您可以透過關閉和開啓此設備來判斷它是否會對廣播和電視收訊造成干擾；如果確實如此，我們建議您嘗試以下列一種或多種方法來排除干擾：

・重新調整天線的接收方向或重新放置接收天線。
・增加設備與接收器的距離。
・將設備連接至不同的插座，使設備與接收器連接在不同的電路上。
・請向經銷商或有經驗的無線電／電視技術人員查詢，以獲得幫助。

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Safety Information: Dell™ Optiplex™ GX150 System User's Guide

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Overview

Use the following safety guidelines to help protect your computer from potential damage and to ensure your own personal safety. These safety guidelines are also available in the *Setup and Quick Reference Guide* that came with your computer.

When Using Your Computer

As you use your computer, observe the following safe-handling guidelines.

CAUTION: Do not operate your computer with any cover(s) (including computer covers, bezels, filler brackets, front-panel inserts, and so on) removed.

- To help avoid damaging your computer, be sure the voltage selection switch on the power supply is set to match the AC power available at your location.

  NOTE: Auto-select power supplies do not require a voltage selection switch. Your power supply may not have this switch.

  - 115 volts (V)/60 hertz (Hz) in most of North and South America and some Far Eastern countries such as South Korea and Taiwan
  - 100 V/50 Hz in eastern Japan and 100 V/60 Hz in western Japan

    NOTE: The voltage selection switch must be set to the 115-V position even though the AC supply in Japan is 100 V.

  - 230 V/50 Hz in most of Europe, the Middle East, and the Far East

  Also be sure your monitor and attached devices are electrically rated to operate with the AC power available in your location.

- Before working inside the computer, unplug the computer to help prevent electric shock or system board damage. Certain system board components continue to receive power any time the computer is connected to AC power.
- To help avoid possible damage to the system board, wait 5 seconds after turning off the computer before disconnecting a device from the computer.
- To help prevent electric shock, plug the computer and device power cables into properly grounded power sources. These cables are equipped with three-prong plugs to help ensure proper grounding. Do not use adapter plugs or remove the grounding prong from a cable. If you must use an extension cable, use a three-wire cable with properly grounded plugs.
- To help protect your computer from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- Be sure nothing rests on your computer's cables and that the cables are not located where they can be stepped on or tripped over.
- Do not spill food or liquids on your computer. If the computer gets wet, consult your *User's Guide.*
- Do not push any objects into the openings of your computer. Doing so can cause fire or electric shock by shorting out interior components.
- Keep your computer away from radiators and heat sources. Also, do not block cooling vents. Avoid placing loose papers underneath your computer; do not place your computer in a closed-in wall unit or on a bed, sofa, or rug.

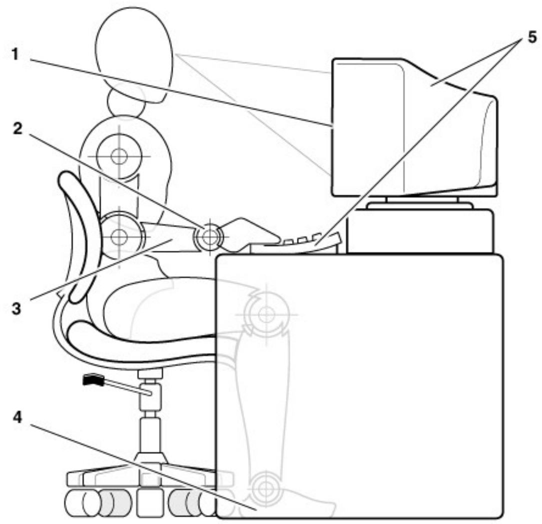
Ergonomic Computing Habits

CAUTION: Improper or prolonged keyboard use may result in injury.

CAUTION: Viewing the monitor screen for extended periods of time may result in eye strain.

For comfort and efficiency, observe the following ergonomic guidelines when setting up and using your computer:

- Position your computer so that the monitor and keyboard are directly in front of you as you work. Special shelves are available (from Dell and other sources) to help you correctly position your keyboard.
- Set the monitor at a comfortable viewing distance (usually 510 to 610 millimeters [20 to 24 inches] from your eyes).
- Make sure the monitor screen is at eye level or slightly lower when you are sitting in front of the monitor.
- Adjust the tilt of the monitor, its contrast and brightness settings, and the lighting around you (such as overhead lights, desk lamps, and the curtains or blinds on nearby windows) to minimize reflections and glare on the monitor screen.
- Use a chair that provides good lower back support.
- Keep your forearms horizontal with your wrists in a neutral, comfortable position while using the keyboard or mouse.
- Always leave space to rest your hands while using the keyboard or mouse.
- Let your upper arms hang naturally at your sides.
- Sit erect, with your feet resting on the floor and your thighs level.
- When sitting, make sure the weight of your legs is on your feet and not on the front of your chair seat. Adjust your chair's height or use a footrest, if necessary, to maintain proper posture.
- Vary your work activities. Try to organize your work so that you do not have to type for extended periods of time. When you stop typing, try to do things that use both hands.



1 Monitor screen at or below eye level

2 Wrists relaxed and flat

3 Arms at desk level

4 Feet flat on the floor

5 Monitor and keyboard positioned directly in front of user

When Working With Your Computer

Before you remove the computer cover, perform the following steps in the sequence indicated.

CAUTION: Do not attempt to service the computer yourself, except as explained in this guide and elsewhere in Dell documentation. Always follow installation and service instructions closely.

NOTICE: To help avoid possible damage to the system board, wait 5 seconds after turning off the computer before removing a component from the system board or disconnecting a device from the computer.

1. Perform an orderly computer shutdown using the operating system menu.

2. Turn off your computer and any devices.

3. Ground yourself by touching an unpainted metal surface on the chassis, such as the metal around the card-slot openings at the back of the computer, before touching anything inside your computer.

   While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components.

4. Disconnect your computer and devices from their power sources. Also, disconnect any telephone or telecommunication lines from the computer.

   Doing so reduces the potential for personal injury or shock.

In addition, take note of these safety guidelines when appropriate:

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.

- Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a microprocessor chip by its edges, not by its pins.

CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Protecting Against Electrostatic Discharge

Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface on the computer chassis.

As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

The following notice may appear throughout this document to remind you of these precautions:

NOTICE: See "Protecting Against Electrostatic Discharge."

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Technical Specifications: Dell™ OptiPlex™ GX150 System User's Guide

Processor

Microprocessor type	Intel® Pentium® III or Celeron™ microprocessor
Internal cache	32-kilobyte (KB) first-level (16-KB data cache; 16-KB instruction cache)
Level 2 (L2) cache memory	integrated 256-KB Advanced Transfer Cache for Pentium III processors; 128-KB Level 2 (L2) cache for Celeron processors
Math coprocessor	internal to Pentium III or Celeron microprocessor

Memory

Architecture	133-megahertz (MHz) synchronous dynamic random-access memory (SDRAM) (memory clock operates at 100 MHz for Intel Celeron processors)
Dual in-line memory module (DIMM) sockets	two non-error checking and correction (non-ECC)
DIMM capacities	64-, 128-, and 256-megabyte (MB) SDRAM
System random-access memory (RAM)	64 to 512 MB
Basic input/output system (BIOS) address	F0000h

System Information

System chip set	Intel 815E
Data bus width	64 bits
Address bus width	32 bits
Direct memory access (DMA) channels	7
Interrupts	15
System BIOS	Desktop Management Interface (DMI) 2.0s- and system management BIOS 2.3-compliant BIOS in 4-megabit (Mb) flash chip
System clock	66, 100, or 133 MHz (matches processor bus speed)
Network interface controller	3Com® 3C920

Graphics (Optional) and Video

Graphics architecture	Intel 3D with direct accelerated graphics port (AGP)
Graphics accelerator	Embedded Intel Dynamic Video Memory Technology (DVMT) with optional 4-MB Graphics Performance Accelerator (GPA), or a 4X AGP card can be supported (low profile cards for small form-factor and small desktop systems; full-height cards [up to 22.9 cm or 9 inches] for the small mini-tower system)

Display cache	optional 4-MB, 133-MHz SDRAM
Graphics memory	Dynamically allocated from system memory
Video resolutions (display supports some or all of these resolutions)	640 x 480 pixels; 85 hertz (Hz) max refresh rate with 16.7 million colors 800 x 600 pixels; 85 Hz max refresh rate with 16.7 million colors 1024 x 768 pixels; 85 Hz max refresh rate with 16.7 million colors 1152 x 864 pixels; 85 Hz max refresh rate with 16.7 million colors 1280 x 1024 pixels; 85 Hz max refresh rate with 16.7 million colors 1600 x 1200 pixels; 75 Hz max refresh rate with 256 colors

Audio

Audio type	Sound Blaster emulation
Audio controller	Analog Devices AD1885 AC97 Codec
Stereo conversion	16 bit (analog-to-digital and digital-to-analog)
Interfaces:	
Internal	PCI bus/AC97
External	stereo line-in minijack, microphone-in minijack, line-out minijack on the rear input/output (I/O) panel; headphones minijack on the front panel

Expansion Bus

Bus types	Peripheral Component Interconnect (PCI)
Bus speed	PCI—33 MHz
Small form-factor (SF) desktop chassis expansion-card connector	one PCI expansion slot; low-profile cards are supported (card size = 6.35 cm [2.5 inches] high by 16.76 cm [6.6 inches] long)
Small desktop (SD) chassis expansion-card connectors:	two PCI expansion slots (card size = 10.67 cm [4.2 inches] high by 17.65 cm [6.95 inches] long)
Small mini-tower (SMT) chassis expansion-card connectors:	four PCI expansion slots (card sizes = three slots support cards up to 27.9 cm high (11 inches), and one slot supports a card up to 22.9 cm high (9 inches)
PCI expansion-card connector size	120 pins
PCI expansion-card connector data width (maximum)	32 bits

Drives

Externally accessible bays:	
Small form-factor chassis	one diskette drive bay for a slimline diskette drive; one optical drive bay for a slimline removable media device
Small desktop chassis	one diskette drive bay for a diskette drive; one optical drive bay for a removable media device
Small mini-tower chassis	two diskette drive bays for a diskette drive; two optical drive bays for a removable media device
Internally accessible bays:	
Small form-factor chassis	one bay for a 1-inch-high enhanced integrated drive electronics (EIDE) hard drive
Small desktop chassis	one bay for a 1-inch-high enhanced integrated drive electronics (EIDE) hard drive
Small mini-tower chassis	two bays for 1-inch-high enhanced integrated drive electronics (EIDE) hard drives

Ports

Externally accessible:

Serial (data terminal equipment [DTE])	two 9-pin connectors; 16550-compatible on the back panel
Parallel	one 25-hole connector (bidirectional) on the back I/O panel
Video	15-hole video graphics array (VGA) connector on the back I/O panel
Integrated network interface controller (NIC)	RJ45 connector on the back I/O panel
Personal System/2 (PS/2)-style keyboard	6-pin mini-Deutsche Industrie Norm (DIN) on the back I/O panel
PS/2-compatible mouse	6-pin mini-DIN on the back I/O panel
Universal Serial Bus (USB)	two USB-compliant connectors on the back I/O panel; two on the front panel

Internally accessible:

Primary EIDE hard drive	40-pin connector on PCI local bus
Secondary EIDE hard drive	40-pin connector on PCI local bus
Diskette drive	34-pin connector
Fan	3-pin connector

Key Combinations

<Ctrl><Alt><Del>	restarts (reboots) the system
<Ctrl><Alt><\>	toggles microprocessor speeds on 101-key keyboard (in MS-DOS® real mode only)
<Ctrl><Alt><#>	toggles microprocessor speeds on 102-key keyboard (in MS-DOS real mode only)
<F2> or <Ctrl><Alt><Enter>	starts embedded system setup (during power-on system test [POST] only)
<F3> or <F12>	automatically starts (boots) the system from the network environment specified by the managed boot agent (MBA) rather than from one of the devices in the system setup **Boot Sequence** option
<Ctrl><Alt><F10>	launches the utility partition (if installed) during system start-up

Controls and Indicators

Power control	push button
Power indicators	green light-emitting diode (LED) on power button—blinking green in sleep state; solid green for power on state
Hard drive access indicator	green LED
Link integrity indicator (on integrated NIC connector)	green LED for 10-Mb operation; orange LED for 100-Mb operation
Activity indicator (on integrated NIC connector)	yellow LED
Diagnostic LEDs	four yellow and/or green LEDs on back of system (see "Back Panel LEDs")
Auxiliary power indicator	AUX_LED on the system board; standby power indicator

Power

DC power supply:	
Wattage	small form-factor chassis: 100 W small desktop chassis: 110 W small mini-tower chassis: 200 W
Heat dissipation	small form-factor chassis: 455 BTU/hr (average) small desktop chassis: 500 BTU/hr (average) small mini-tower chassis: 910 BTU/hr (average)
Voltage	90 to 135 volts (V) at 60 Hz; 180 to 265 V at 50 Hz
Backup battery	3-V CR2032 lithium coin cell

Physical

Small form-factor chassis:	
Height	9.0 cm (3.57 inches)
Width	31.9 cm (12.54 inches)
Depth	35.4 cm (13.93 inches)
Weight	6.9 kg (15 lbs)
Small desktop chassis:	
Height	10.6 cm (4.2 inches)
Width	38.9 cm (15.3 inches)
Depth	43.2 cm (17 inches)
Weight	9.9 kg (22 lbs)
Small mini-tower chassis:	
Height	42.5 cm (16.7 inches)
Width	18.1 cm (7.13 inches)
Depth	44.7 cm (17.6 inches)
Weight	12.7 kg (28 lbs)

Environmental

Temperature:	
Operating	10° to 35° Celsius (C) (50° to 95° Fahrenheit [F])
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 gravities (G) at 3 to 200 Hz at 1 octave/min
Storage	0.5 G at 3 to 200 Hz at 1 octave/min
Maximum shock:	
Operating	bottom half-sine pulse with a change in velocity of 20 inches/sec (50.8 cm/sec)

Storage	27-G faired square wave with a velocity change of 200 inches/sec (508 cm/sec)
Altitude:	
Operating	-16 to 3048 meters (m) (-50 to 10,000 feet [ft])
Storage	-16 to 10,600 m (-50 to 35,000 ft)

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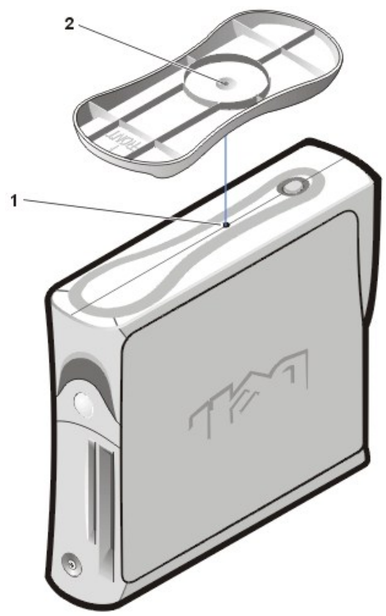
Stand: Dell™ OptiPlex™ GX150 System User's Guide

Removing and Attaching the Small Form-Factor and Small Desktop Computer Stands

To remove the stand from the small form-factor and small desktop computers, perform the following steps:

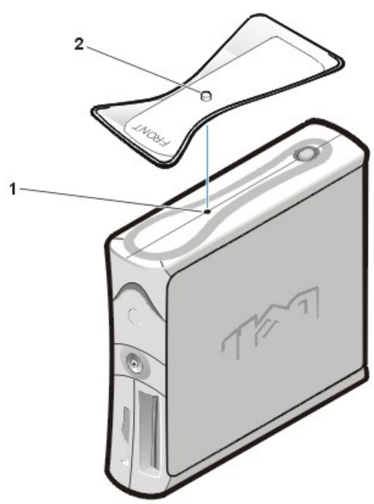
1. Turn the computer over so that the stand is at the top.
2. Loosen the thumb screw and lift the stand away (see the following figures).
3. Place the computer in a horizontal position.

Small Form-Factor Computer Stand



1 Locator hole
2 Thumb screw

Small Desktop Computer Stand



1 Locator hole
2 Thumb screw

To attach the stand to the small form-factor and small desktop computers, perform the following steps:

1. Place the computer on its right side so that the drive bays are at the bottom.
2. Fit the stand onto what was the left side of the computer.
   a. Position the stand as shown in the figure by aligning the large round hole in the stand with the securing button on the side of the cover and aligning the captive screw in the stand with the screw hole in the cover.
   b. When the stand is in place, tighten the thumbscrew.
3. Rotate the computer so that the stand is at the bottom and the drives are at the top.

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Installing Upgrades: Dell™ OptiPlex™ GX150 System User's Guide

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Computer Cover

CAUTION: Before you perform this procedure, see "[Safety Information](#)."

NOTE: On the small form-factor and small desktop systems, [remove the stand](#) before you open the computer cover. On the small mini-tower system, place the system on its side before you open the cover.

To open the computer cover, perform the following steps:

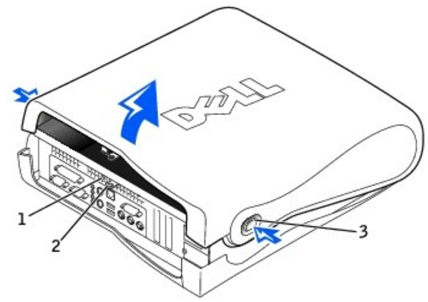
1. Turn off your computer and peripherals, and observe the caution for your personal safety and protection of your equipment described in "[Safety First—For You and Your Computer](#)."
2. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.
3. Open the computer cover as follows:

   NOTICE: Do not open the cover if the system is on the edge of a desk or table. Doing so may cause the system to tip over and fall. Make sure that the system is situated so that there is at least 12 inches of desk- or table-top for the cover to rest on.

   a. Press the two release buttons until the cover is free to swing up.

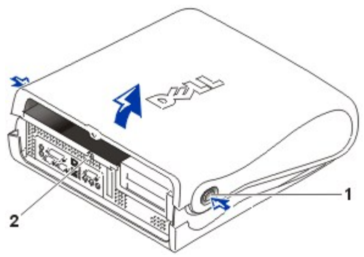
   b. Raise the back of the cover, and pivot it toward the front of the system.

Opening the Small Form-Factor Computer Cover



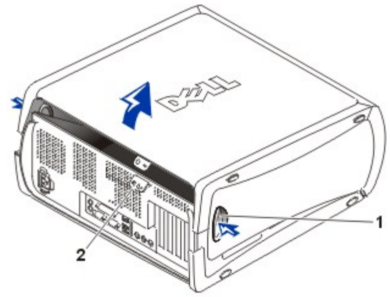
1 Security cable slot
2 Padlock ring
3 Release buttons (one on each side)

Opening the Small Desktop Computer Cover



1 Release buttons (one on each side)
2 Padlock ring

Opening the Small Mini-Tower Computer Cover

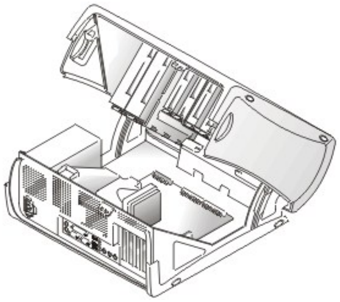


1 Release buttons (one on each side)

2 Padlock ring

NOTICE: To prevent damage to the system board, open the cover until it catches at a 45-degree angle. Then remove the optical drive data cable and/or the hard drive data cable from the system board and open the cover to a 90-degree angle.

Opening the Small Mini-Tower System to a 45-Degree Angle



To close the computer cover, perform the following steps:

1. Check all cable connections, especially those that might have come loose during your work. Fold cables out of the way so that they do not catch on the computer cover. Make sure cables are not routed over the drive cage—they will prevent the cover from closing properly.
2. Check to see that no tools or extra parts are left inside the chassis.
3. On the small mini-tower system, close the cover to a 45-degree angle and connect the optical drive data cable.
4. Close the system cover by pivoting the cover down toward the back of the system and into position. Make sure that the release buttons click into place.
5. If you are using a padlock to secure your system, reinstall the padlock.

Expansion Cards

Small Form-Factor Systems

- Installing an Expansion Card
- Removing an Expansion Card

Small Mini-Tower Systems

- Installing and Removing Expansion Cards

Small Desktop System

- Installing an Expansion Card
- Removing an Expansion Card
- Riser Boards
- Removing and Replacing the Expansion-Card Cage

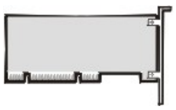
Small Form-Factor and Mini-Tower System

The small form-factor system provides one expansion slot for a low-profile, 32-bit, 33-megahertz (MHz) Peripheral Component Interconnect (PCI) card.

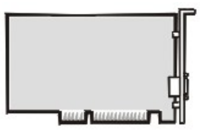
The small mini-tower system provides four expansion slots for 32-bit, 33-MHz PCI cards.

Both the small form-factor and small mini-tower systems also provide a slot for one 32-bit accelerated graphics port (AGP) card (low-profile in the small form-factor system). The expansion slot supports AGP 4x or 2x modes operating at 1.5 volts (V) or 3.3 V. This slot may also be used for a 4-megabyte (MB) graphics performance accelerator (GPA, formerly called an AIMM).

32-Bit Low Profile Expansion Card



32-Bit Expansion Card



NOTE: To meet PC99 requirements, your Dell system uses only PCI expansion slots. Industry-Standard Architecture (ISA) expansion cards are not supported.

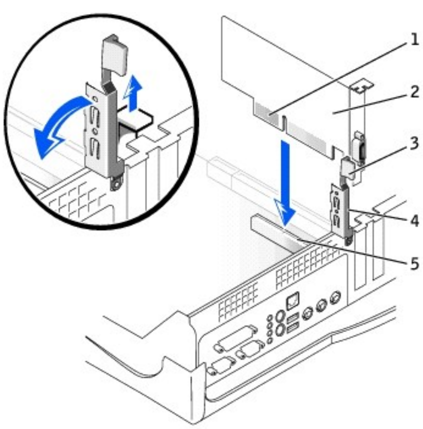
NOTICE: Before disconnecting a peripheral from the computer or removing a component from the system board, verify that the auxiliary power light-emitting diode (LED) on the system board has turned off.

Installing an Expansion Card in the Small Form-Factor System

CAUTION: Before you perform this procedure, see "Safety Information."

NOTICE: Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. If you are replacing an expansion card, remove the current driver for the expansion card from the operating system.
2. Turn off the computer and devices, disconnect them from their electrical outlets, and then wait 10 to 20 seconds.
3. Open the computer cover.
4. Press the lever on the expansion card retention arm and raise the retention arm.



1 Card-edge connector
2 Expansion card
3 Hinged lever
4 Retention arm
5 Expansion-card connector

5. If you are installing a new expansion card, remove the filler bracket for an empty card-slot opening, then continue with step 7.
6. If you are replacing an expansion card that is already installed in the computer, remove the expansion card.

   If necessary, disconnect any cables connected to the card. Grasp the card by its top corners, and ease it out of its connector.

7. Prepare the expansion card for installation.

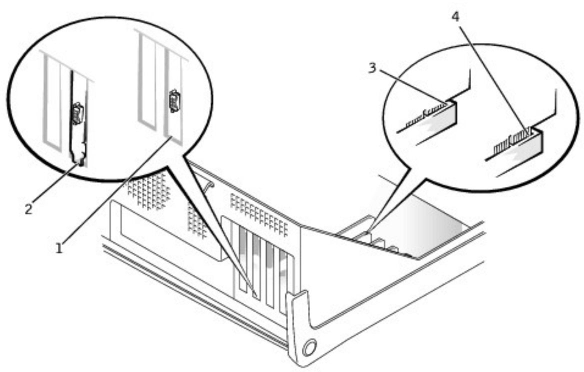
   See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.

⚠ **CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any expansion cards. Verify that the standby power light on the system board is off. To locate this light, see "System Board Components."**

8. Place the expansion card on the connector and press down firmly. Make sure that the card is fully seated in the slot.

   If the expansion card is full-length, insert the end of the card into the expansion-card guide bracket as you lower the card toward its connector on the system board. Insert the card firmly into the expansion-card connector on the system board.

Expansion Card Connection



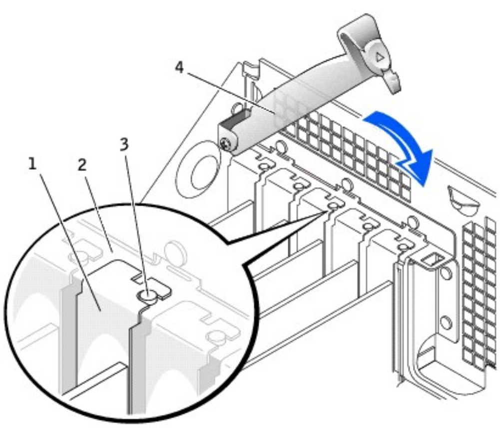
1	Bracket within slot
2	Bracket caught outside of slot
3	Fully seated card
4	Not fully seated card

9. Before lowering the retention arm, make sure of the following:

   - Tops of all expansion cards and filler brackets are flush with the alignment bar.
   - Notch in the top of the card or filler bracket fits around the alignment guide.

10. Press the arm into place, securing the expansion card(s) in the computer.

Retention Arm Closure



1	Filler bracket
2	Alignment bar
3	Alignment guide
4	Retention arm

11. Connect any cables that should be attached to the card.

See the documentation supplied with the card for information about the card's cable connections.

NOTICE: Do not route expansion-card cables over or behind the expansion cards. Cables routed over the expansion cards can prevent the computer cover from closing properly or cause damage to the equipment.

12. Close the computer cover, reconnect the computer and devices to their electrical outlets, and turn them on.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next computer start-up:

```
ALERT! Cover was previously removed.
```

13. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

14. If you installed a sound card, perform the following steps:

    a. Enter system setup, select **Integrated Devices**, and change the setting for **Sound** to **Off**.

    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the I/O panel (see "I/O Panel").

15. If you installed an add-in network adapter, perform the following steps:

    a. Enter system setup, select **Integrated Devices** and change the setting for **Network Interface Card** to **Off**.

    b. Connect the network cable to the add-in network adapter's connectors. Do not connect the network cable to the integrated connector on the I/O panel (see "I/O Panel").

Removing an Expansion Card in the Small Form-Factor System

CAUTION: Before you perform this procedure, see "Safety Information."

NOTICE: Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, and wait 10 to 20 seconds.

2. Open the computer cover.

3. Press the lever on the expansion card retention arm and raise the retention arm (see the illustration for your computer in "Installing an Expansion Card").

4. If necessary, disconnect any cables connected to the card.

5. Grasp the card by its top corners, and ease it out of its connector.

6. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   If you need a filler bracket, contact Dell.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the computer. The brackets also keep dust and dirt out of your computer.

7. Lower the retention arm and press it into place, securing the expansion card(s) in the computer.

8. Close the computer cover, reconnect the computer and devices to their electrical outlets, and turn them on.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next computer start-up:

```
ALERT! Cover was previously removed.
```

9. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

10. If you removed a sound card, perform the following steps:

    a. Enter system setup, select **Integrated Devices**, and change the setting for **Sound** to **On**.

    b. Connect external audio devices to the audio connectors on the I/O panel (see "I/O Panel").

11. If you removed an add-in network adapter, perform the following steps:

a. Enter system setup, select **Integrated Devices** and change the setting for **Network Interface Card** to **On**.

b. Connect the network cable to the integrated connector on the I/O panel (see "I/O Panel").

Installing and Removing Expansion Cards in the Small Mini-Tower Systems

CAUTION: Before you perform this procedure, see "Safety Information."

NOTICE: Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

To install an expansion card in the small mini-tower systems, perform the following steps:

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 10 to 20 seconds, and then open the computer cover.

2. Prepare the expansion card for installation.

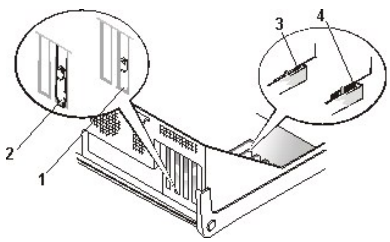
   See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing it for your system.

3. Raise the lever that covers the card-slot opening on the back of the chassis.

4. Place the expansion card on the connector and press down firmly. Make sure that the card is fully seated in the slot.

   If the expansion card is full-length, insert the end of the card into the expansion-card guide bracket as you lower the card toward its connector on the system board. Insert the card firmly into the expansion-card connector on the system board.

Expansion-Card Connection



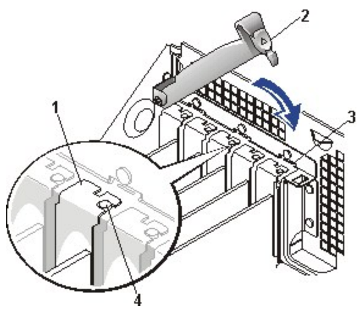
1 Bracket within slot
2 Bracket caught outside of slot
3 Fully seated card
4 Not fully seated card

5. Before lowering the retention arm, make sure of the following:

   - Tops of all expansion cards and filler brackets are flush with the alignment bar.
   - Notch in the top of the card or filler bracket fits around the alignment guide.

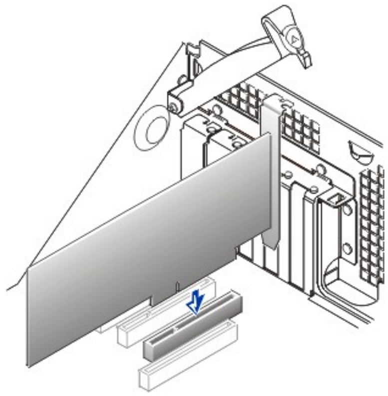
   Press the arm into place, securing the expansion card(s) in the computer.

Retention Arm Closure



1 Filler bracket
2 Retention arm
3 Alignment bar
4 Alignment guide

Installing an Expansion Card



To remove an expansion card in the small mini-tower system, perform the following steps:

1. If necessary, disconnect any cables connected to the card.
2. Raise the lever on the back of the chassis and remove the card from the system board connector.
3. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your system.

4. Lower the lever that covers the card-slot opening on the back of the chassis.
5. Close the computer cover, reconnect the system and peripherals to their electrical outlets, and turn them on.

   NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next system start-up:

   ```
   ALERT! Cover was previously removed.
   ```

6. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

   NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

7. If you removed a sound card, enter system setup, select **Integrated Devices**, and change the setting for **Sound** to **On**.

Small Desktop System

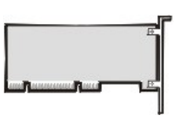
The small desktop system provides the following expansion slots for the following cards:

- Two 32-bit, 33-MHz PCI expansion cards.
- One 32-bit, low-profile accelerated graphics port (AGP) card. The expansion slot supports AGP 4x or 2x modes operating at 1.5 volts (V) or 3.3 V. This slot may also be used for a 4-megabyte (MB) graphics performance accelerator (GPA, formerly called an AIMM).

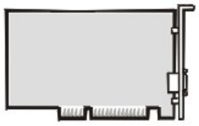
NOTE: To meet PC99 requirements, your Dell system uses only PCI expansion slots. ISA expansion cards are not supported.

NOTICE: Before disconnecting a peripheral from the computer or removing a component from the system board, verify that the auxiliary power LED on the system board has turned off.

32-Bit Low Profile Expansion Card



32-Bit Expansion Card



Installing an Expansion Card in the Small Desktop System

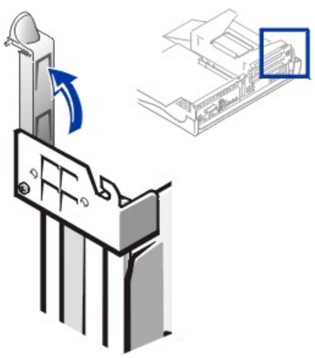
CAUTION: Before you perform this procedure, see "Safety Information."

NOTICE: Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 10 to 20 seconds, and then open the computer cover.
2. Prepare the expansion card for installation.

   See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing it for your system.
3. Remove the expansion-card cage.
4. Raise the plastic lever that covers the card-slot opening for the expansion-card connector you intend to use.

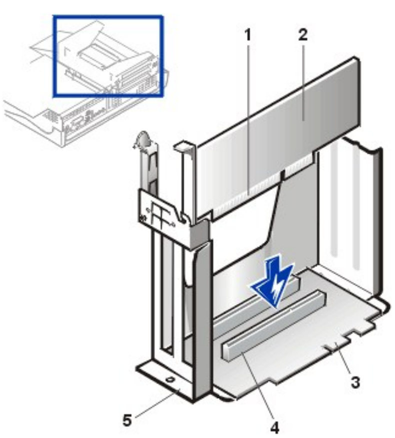
Removing the Filler Bracket



CAUTION: Some network cards automatically start up the system when they are connected. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any expansion cards. Verify that the auxiliary power LED on the system board is off.

5. Remove the filler bracket by raising it up and out of the slot.
6. Insert the expansion card into the expansion-card connector.

Installing an Expansion Card



1	Card-edge connector
2	Expansion card
3	Riser board
4	Expansion-card connector
5	Expansion-card cage

7. When the card is firmly seated in the connector, secure the card's mounting bracket to the system by lowering the plastic lever.
8. Connect any cables that should be attached to the card.

   See the documentation for the card for information about the card's cable connections.

9. Replace the expansion-card cage.
10. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

    NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next system start-up:

    ```
    ALERT! Cover was previously removed.
    ```

11. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

    NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

12. If you installed a sound card, enter system setup, select **Integrated Devices**, and change the setting for **Sound** to **Off**.

Removing an Expansion Card in the Small Desktop System

CAUTION: Before you perform this procedure, see "Safety Information."

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then open the computer cover.
2. If necessary, disconnect any cables connected to the card.
3. Raise the plastic lever that secures the card you want to remove.
4. Grasp the card by its top corners, and ease it out of its connector.
5. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the system. The brackets also keep dust and dirt out of your system.

6. Close the computer cover, reconnect the computer and peripherals to their electrical outlets, and turn them on.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next system start-up:

```
ALERT! Cover was previously removed.
```

7. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

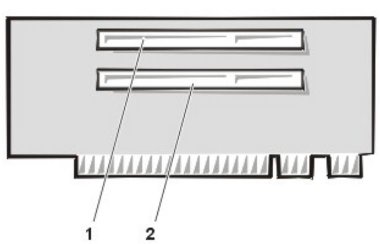
   NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

8. If you removed a sound card, enter system setup, select **Integrated Devices**, and change the setting for **Sound** to **On**.

Riser Boards in the Small Desktop System

The PCI riser board in the small desktop system has two PCI expansion card slots.

Small Desktop System PCI Riser Board



1 PCI expansion-card connector 1 (PCI1)

2 PCI expansion-card connector 2 (PCI2)

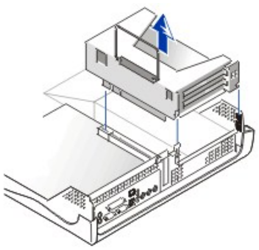
Removing and Replacing the Expansion-Card Cage in the Small Desktop System

To remove the expansion-card cage from the small desktop system, perform the following steps.

CAUTION: Before you perform this procedure, see "Safety Information."

1. Open the computer cover.
2. Check any cables connected to expansion cards through the back-panel openings. Disconnect any cables that will not reach the cage once it is removed from the chassis.

Removing the Expansion-Card Cage From the Small Desktop System

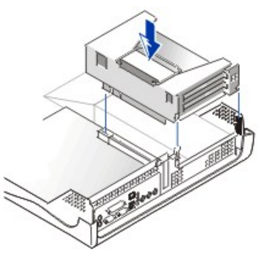


3. Gently pull on the handle and lift the expansion-card cage away from the chassis.

To replace the expansion-card cage in the small desktop system, perform the following steps:

1. Align the slots in the side of the expansion-card cage with the tabs on the side of the system, and slide the expansion-card cage down into place.

Replacing the Expansion-Card Cage In the Small Desktop System



2. Make sure that the riser board is fully seated in the connector on the system board.
3. Reconnect any cables that you removed in step 2 of the previous procedure.

System Memory

You can increase system memory up to 512 MB by using synchronous dynamic random-access memory (SDRAM) dual in-line memory modules (DIMMs). The system board illustration shows the location of the DIMM sockets on the system board (DIMMs must be non-error checking and correction [non-ECC]).

When you add system memory, you may install DIMMs in either socket. For optimum operation, Dell recommends that you install a DIMM in socket A first (closest to the processor) before installing a DIMM in socket B.

NOTICE: Before you install new memory modules, download the most recent BIOS for your computer from the Dell Support website at **support.dell.com**.

Installing DIMMs

To upgrade memory, perform the following steps.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you upgrade memory, see the other precautions in "Safety Information. "

1. Open the computer cover.

2. If necessary, remove any DIMMs that occupy sockets in which you plan to install the upgrade DIMMs.

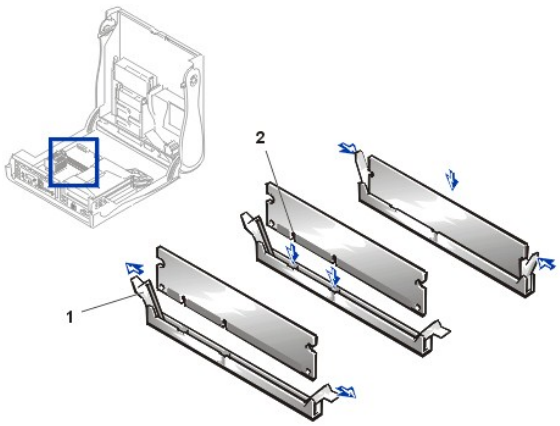
3. Install the upgrade DIMMs.

   a. Locate the plastic securing clips at each end of the socket.

   b. Press the clips outward until they snap open.

   c. Press the DIMM straight into the slot running down the center of the socket until the securing tabs snap into place around the ends of the DIMM.

Installing a DIMM



1 Securing clips (2)

2 Slot

4. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.

   NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next system start-up:

   ```
   ALERT! Cover was previously removed.
   ```

   You will need to reset the chassis intrusion detector.

   The system detects that the new memory does not match the existing system configuration information and generates the following message:

   ```
   The amount of system memory has changed.
   Strike the F1 key to continue, F2 to run the setup utility
   ```

5. Press <F2> to enter system setup, and check the value for **System Memory**.

   The system should have already changed the value of **System Memory** to reflect the newly installed memory. Verify the new total. If it is correct, skip to step 7.

6. If the memory total is incorrect, turn off and disconnect your computer and peripherals from their electrical outlets. Open the computer cover, and check the installed DIMMs to make sure that they are seated properly in their sockets. Then repeat steps 3, 4, and 5.

7. Reset the chassis intrusion detector by changing **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

   NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

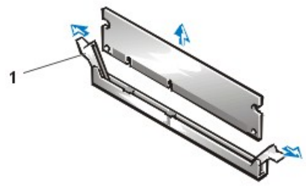
8. When the **System Memory** total is correct, press <Esc> to exit system setup.

9. Run the Dell Diagnostics to verify that the DIMMs are operating properly.

Removing DIMMs

To remove a DIMM, press the securing clips outward simultaneously until the DIMM disengages and pops out slightly from the socket.

Removing a DIMM



1 Securing clips (2)

AGP Graphics Card/GPA (AIMM) Card

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you upgrade memory, see the other precautions in "Safety Information."

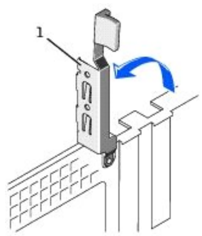
To install an AGP graphics card, perform the following steps.

NOTE: The small form-factor and small desktop systems support low-profile AGP cards.

1. Open the computer cover.
2. Remove the filler bracket (see the back panel for the location of the filler bracket [AGP slot]) by raising the hinged lever and sliding the bracket up.

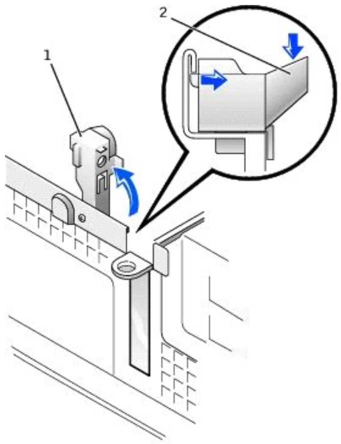
   On the small desktop computer, press the indented tab with your thumb at an angle toward the system board until you release the tab. Continue holding the lever and pull the lever up.

Removing the AGP Slot Filler Bracket in the Small Form-Factor Desktop System



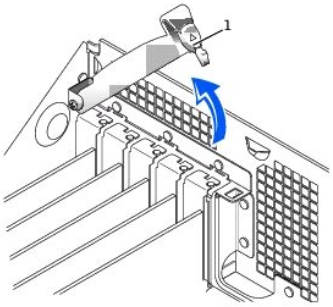
1 Hinged lever

Removing the AGP Slot Filler Bracket in the Small Desktop System



1 Hinged lever
2 Indented tab

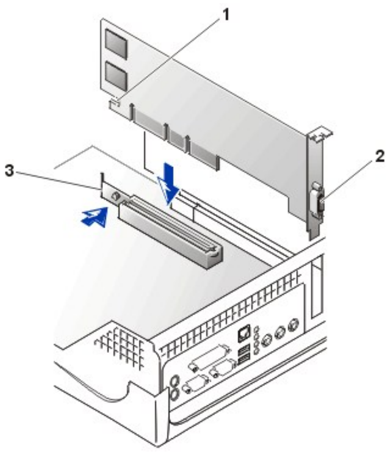
Removing the AGP Slot Filler Bracket in the Small Mini-Tower System



1 Hinged lever

3. Insert the AGP card into the connector on the system board. Make sure that the card is securely fastened by the AGP card clip.

Inserting an AGP Card



1 Front end notch of AGP card

2 I/O panel AGP video connector

3 AGP card clip lever

   a. Depending on your computer, press the AGP card clip lever toward the expansion-card cage or toward the PCI 1 slot.

   b. Slide the AGP card into place.

   c. Release the AGP card clip lever, ensuring that the tab on the AGP card clip lever fits into the notch on the front end of the AGP card.

4. Secure the AGP card bracket by lowering the securing lever on the back panel.

5. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to appear on the screen at the next system start-up:

```
ALERT! Cover was previously removed.
```

6. Reset the chassis intrusion detector by entering system setup and changing the **Chassis Intrusion** option to **Enabled** or **Enabled-Silent**.

NOTE: If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

To install a GPA (formerly called AIMM) card, perform the following steps.

1. Open the computer cover.

2. Locate the GPA connector on the system board.

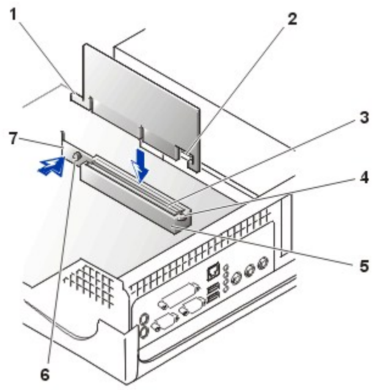
3. Insert the card into the connector.

   a. Hook the back end of the card under the AGP card clip tab.

   b. Lower the front end of the card, and push the AGP card clip lever away so that the AGP card clip lever tab is out of the way.

   c. Insert the card firmly into the connector, and release the lever so that the tab is over the front end card bottom.

Installing a GPA (AIMM) Card



1	Front end of GPA card
2	Back end of GPA card
3	GPA connector
4	AGP card clip tab
5	AGP card clip
6	AGP card clip lever tab
7	AGP card clip lever

4. Close the computer cover.

To remove a GPA card, perform the following steps.

1. Press on the AGP card clip lever so that the tab is not covering the card edge bottom.
2. Lift the card's front end up, and slightly tilt it upward until the other card end is free from the AGP card clip tab.

Microprocessor

To replace the microprocessor, perform the following steps.

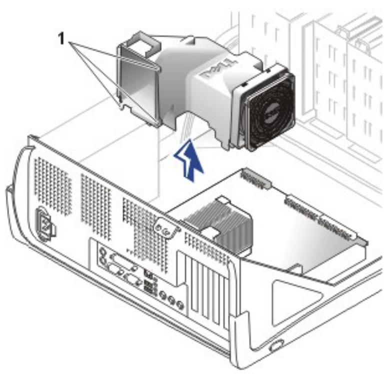
NOTE: Dell recommends that only a technically knowledgeable person perform the following procedure.

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you upgrade the microprocessor, see the other precautions in "Safety Information."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, and the open the computer cover.

CAUTION: The microprocessor and heat sink assembly can get extremely hot. Be sure the assembly has had sufficient time to cool before you touch it.

2. Disconnect the cooling fan power cable from the FAN1 connector on the system board.
3. *On the small mini-tower system*, remove the airflow shroud as shown in the following illustration.

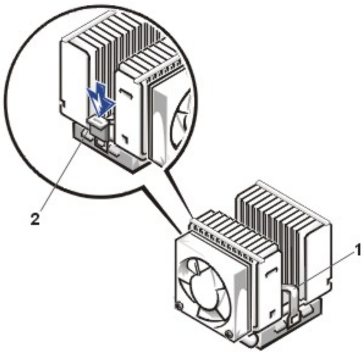


1	Anchor tabs (3)

4. Remove the cooling fan/heat sink assembly.

   Your system has one of two types of heat sink clip—a green-tabbed clip or a toggle clip.

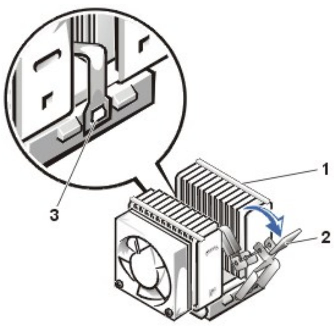
   - *For systems with the green-tabbed clip*, press down on the inside edge of the green tab as shown in the following illustration. Remove the clip from the socket, and then remove the heat sink from the microprocessor.



1 Clip

2 Green tab

- *For systems with the toggle clip*, remove the DIMM closest to the microprocessor heat sink assembly. Pull down on the toggle clip lever until you can unhook the ends of the clip from the tabs on each side of the ZIF socket. Remove the clip from the socket, and then lift the heat sink from the microprocessor.



1 Heat sink

2 Toggle clip lever

3 ZIF socket tabs (2)

5. Remove the microprocessor chip from the socket.

   NOTICE: Be careful not to bend any of the pins when you remove the microprocessor package from the ZIF socket. Bending the package pins can permanently damage the microprocessor.

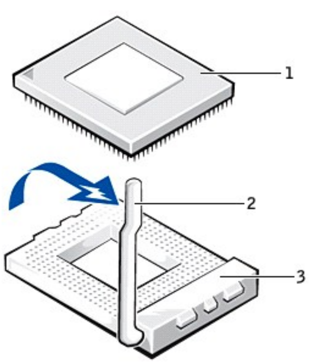
   The ZIF socket has a lever-type handle that secures and releases the microprocessor package from the ZIF socket.

   a. Pull the socket release lever straight up until the microprocessor package releases.

   b. Remove the microprocessor package from the socket.

   Leave the release lever extended so that the socket is ready for the new microprocessor package.

Removing the Microprocessor



1 Microprocessor chip

2 Socket release lever

3 ZIF socket

Replacing the Microprocessor Package and Cooling Fan/Heat Sink Assembly

NOTICE: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: If you are replacing the microprocessor, do not reuse the old heat sink. Doing so can cause the microprocessor to overheat because of an inadequate amount of thermal compound between the heat sink assembly and the microprocessor package.

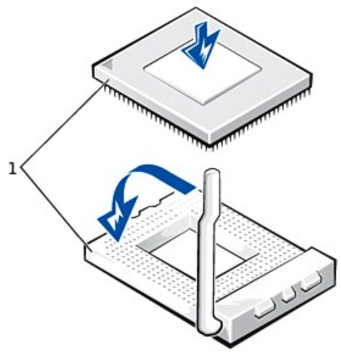
NOTICE: You must position the microprocessor package correctly in the ZIF socket to avoid permanent damage to the microprocessor and the computer when you turn on the system.

1. Install the microprocessor package in the ZIF socket.

    a. If the release lever on the ZIF socket is not all the way out, move it to that position now.

    b. Align pin-1 (the beveled corner) of the microprocessor package and pin-1 of the ZIF socket.

Installing the Microprocessor Chip



1 Pin-1 corners of chip and socket aligned

    c. Set the microprocessor package lightly in the socket, making sure that all the pins are headed into the correct holes.

    Because the system uses a ZIF socket, there is no need to use force (which could bend the pins if the microprocessor package is misaligned).

    d. When the microprocessor package is positioned correctly, press it with minimal pressure to fully seat it in the ZIF socket.

    e. When the microprocessor package is fully seated, pivot the release lever back toward the system board until it snaps into place, securing the microprocessor package.

2. Replace the cooling fan/heat sink assembly.

    a. If you are installing a new cooling fan/heat sink assembly, remove the plastic cover that is attached to the bottom of the new cooling fan/heat sink assembly.

    b. Place the cooling fan/heat sink assembly on top of the microprocessor package.

    c. Orient the securing clip so that the tab is facing the memory modules, and hook both ends of the securing clip over the ZIF socket tabs.

    d. If your system has the toggle clip, rotate the lever upward until it snaps into place. Then replace the DIMM you removed earlier.

    NOTE: If you are installing a microprocessor replacement kit from Dell, return the original heat sink assembly and microproces package to Dell in the same package in which your replacement kit was sent. Your microprocessor replacement kit should inclu replacement microprocessor heat sink and one replacement securing clip.

3. If you have a mini tower system, replace the airflow shroud.

4. Reconnect the cooling fan power cable to the FAN1 connector on the system board.

Checking System Functions

As the system boots, it detects the presence of the new microprocessor and automatically changes the system configuration information in system setup.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to be displayed at the next system start-up:

```
ALERT! Cover was previously removed.
```

1. Enter system setup and confirm that the system data area correctly identifies the type of installed microprocessor.

    NOTE: For instructions on using system setup, see "System Settings."

2. While in system setup, reset the **Chassis Intrusion** option by pressing the left- or right-arrow key to select **Reset** and then choosing **Enabled, Enabled-Silent,** or **Disabled**.

   NOTE: If a setup password has been assigned by someone else, contact the network administrator for information on resetting the chassis intrusion detector.

3. Run the Dell Diagnostics to verify that the new processor is operating correctly.

VRM

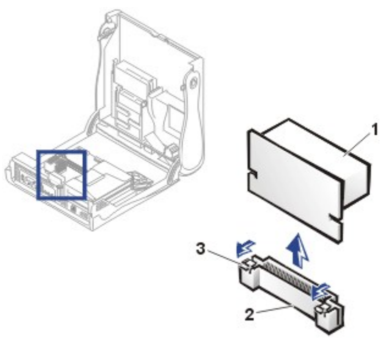
Some higher-speed microprocessors may require a new voltage regulator module (VRM). If your microprocessor upgrade kit comes with a VRM, perform the following steps:

1. To remove the VRM, press on the levers of the VRM connector until the module is released and pops up. Since there is not much room between the microprocessor heat sink and the VRM, you may have to use a flat-head screwdriver to press on the levers.

   NOTE: Some systems do not contain a removable VRM.

   NOTICE: If you use a flat-head screwdriver to press on the levers, be very careful to not let the screwdriver slip and damage system board components.

Removing the VRM



1 VRM

2 VRM connector

3 Levers (2)

2. Install the VRM by inserting it into the connector until you hear the module snap into place.

Hard Drives

- General Information About Hard Drives
- EIDE Drive Addressing
- Connecting Drives
- Removing and Replacing Hard Drives
- Adding a Second Hard Drive to a System With a Single Optical Drive and ZIP Drive

General Information About Hard Drives

The small form-factor and small desktop systems support a single enhanced integrated drive electronics (EIDE) hard drive in the hard drive bay; the small mini-tower system supports two EIDE hard drives.

EIDE Drive Addressing

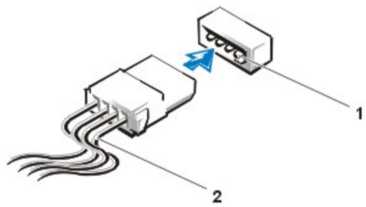
All EIDE devices require that you configure the cable select setting, which assigns master and slave status to devices according to their position on the interface cable. You usually configure a drive for cable select by setting a jumper or switch, depending on the drive. Refer to the drive documentation in your upgrade kit for information on configuring devices for the cable select setting. When you connect two EIDE devices to a single EIDE interface cable and configure them for the cable select setting, the device attached to the last connector on the interface cable is the master or boot device (drive 0), and the device attached to the middle connector on the interface cable is the slave device (drive 1).

With the two EIDE interface connectors on the system board, your system supports up to two EIDE devices. EIDE hard drives should be connected to the EIDE interface connector labeled "IDE1." (Always connect CD-ROM drives to the EIDE interface connector labeled "IDE2.")

Connecting Drives

When you install a drive, you connect two cables—a DC power cable and an interface cable—to the back of the drive. Your drive’s power input connector (to which you connect the DC power cable) resembles the following connector.

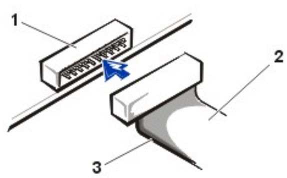
Power Cable Connector



1 Power input connector
2 Power cable

The drive's interface connector is a card-edge connector or a header connector, as shown in the following figure.

Drive Interface Connectors



1 Header connector
2 Interface cable
3 Colored strip on the cable

When you attach the interface cable to a drive, be sure to match the colored strip on the cable to pin 1 of the drive's interface connector. For the location of pin 1 on the drive's interface connector, see the documentation that came with the drive.

When you disconnect an interface cable from the system board, be sure to press in on the locking tabs on the cable connector before you disconnect the cable. When you attach an interface cable to the system board, be sure that the locking tabs snap into place so that the cable is firmly attached to the connector on the system board.

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored strip along one edge of the cable) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

NOTICE: When you connect an interface cable, do not reverse the interface cable (do not place the colored strip away from pin 1 of the connector). Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.

Removing and Replacing Hard Drives

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety Information."

1. If you are replacing a hard drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.

NOTICE: Ground yourself by touching an unpainted metal surface on the back of the chassis.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

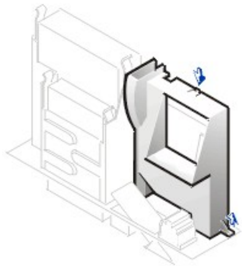
2. Unpack the drive, and prepare it for installation.

   Check the documentation for the drive to verify that it is configured for your system.

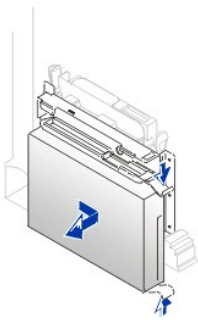
3. Open the computer cover.

4. On the small desktop system, remove the plastic shroud covering the hard drive by pressing in on the indented tab at the top of the shroud and lifting the shroud away.

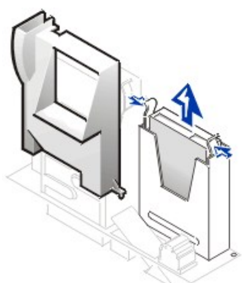
Removing the Hard-Drive Shroud—Small Desktop System



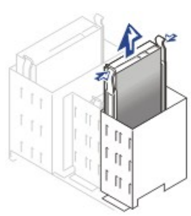
Removing the Hard Drive—Small Form-Factor Desktop System



Removing the Hard Drive—Small Desktop System



Removing the Hard Drive—Small Mini-Tower System



5. Disconnect the power and interface cables from the drive.
6. For the small form-factor system, press in on the tabs on each side of the bracket and slide it toward the I/O panel and remove the drive from the chassis.

   For the small desktop and small mini-tower system, press in on the tabs on each side of the bracket, and slide it up and out.
7. If your replacement hard drive does not have the bracket rails attached, remove the four screws holding the bracket rails to the hard drive.

Replacing the Hard Drive—Small Form-Factor Desktop, Small Desktop, and Small Mini-Tower System

NOTICE: To avoid possibly damaging the drive by ESD, ground yourself by touching an unpainted metal surface on the back of the chassis.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

1. If necessary, attach the bracket rails to the new hard drive by aligning the four screw holes of the drive and bracket and then inserting and tightening the screws that came with your upgrade kit.

2. Reinstall the hard-drive bracket in the chassis by gently sliding the bracket into place until you hear it securely click.

3. Connect a power cable to the power input connector on the back of the drive, and connect one of the device connectors on the EIDE cable to the 40-pin interface connector on the back of the hard drive.

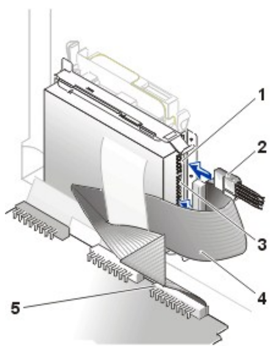
4. Check all connectors to be certain that they are properly cabled and firmly seated.

5. On the small desktop system, replace the hard-drive shroud.

NOTICE: To avoid possible damage to the system, you must match the colored stripe on the EIDE interface cable with pin 1 on the drive's interface connector and with the EIDE interface connector (labeled IDE1) on the system board.

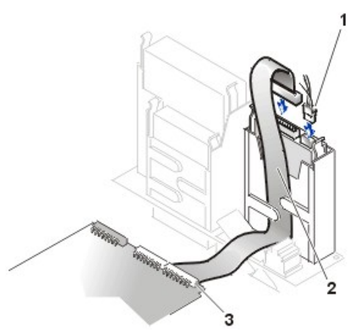
To locate EIDE connector 1 (IDE1) on the system board, see "System Board Components."

Attaching Hard-Drive Cables—Small Form-Factor Desktop System



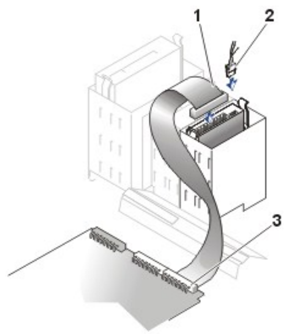
1 Drive power connector
2 Hard-drive power cable
3 Drive IDE1 connector
4 Hard-drive data cable
5 System board IDE1 connector

Attaching Hard-Drive Cables—Small Desktop System



1 Hard-drive power cable
2 Hard-drive data cable
3 IDE1 connector

Attaching Hard-Drive Cables—Small Mini-Tower System



1 Hard-drive data cable
2 Hard-drive power cable
3 IDE1 connector

6. Close the computer cover.

7. If the drive you just installed is the primary drive, insert a bootable system diskette into the diskette drive.
8. Turn on the computer.
9. Enter system setup and update the appropriate **Primary Drive** option, **0** or **1**.

   See "System Settings" for complete information on system setup.
10. Reset the chassis intrusion detector.
11. Restart the system.
12. Partition and logically format the system's hard drive before proceeding to the next step.

    For partition and format instructions, refer to the documentation that came with the operating system.

    NOTE: On systems with hard drives larger than 2 GB, create a primary partition of 2 GB and divide the remaining capacity into partitions of 2 GB or less. For example, a system with a 2.5-GB hard drive would have a primary partition of 2 GB (drive C) and a second partition of 500 MB (drive D). Hard drives must be partitioned this way because MS-DOS®—based operating systems (including Microsoft® Windows NT®, when using a FAT16 file system) do not support drive partitions larger than 2 GB.
13. Test the hard drive by running the Dell Diagnostics.

    See "Solving Problems" for complete information.
14. If the drive you just installed is the primary drive, install the operating system on the hard drive.

    For instructions, refer to the documentation that came with the operating system.

Adding a Second Hard Drive to a System With a Single Optical Drive and ZIP Drive

CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety Information."

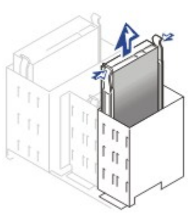
NOTICE: Ground yourself by touching an unpainted metal surface on the back of the chassis.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

1. Unpack the drive, and prepare it for installation.

   Check the documentation for the drive to verify that it is configured for your system.
2. Open the computer cover.

Removing the Hard Drive—Small Mini-Tower System



3. Disconnect the data and power cables from the hard drive, ZIP drive, optical drive, and diskette drive.
4. Move the optical drive to the right optical drive bay (see the illustration "System Cables").
5. Move the front-panel insert that covers the right optical drive bay to cover the left optical drive bay.
6. Swap bays for the diskette drive and ZIP drive.
7. Swap the diskette drive and ZIP drive front-panel inserts.
8. Move the first hard drive (already installed) to the right hard drive bay.
9. Install the second hard drive in the left hard drive bay.
10. Connect one end of the optical drive data cable and a power cable to the optical drive.

11. Connect the other end of the optical drive data cable and a power cable to the ZIP drive.
12. Connect the diskette drive data cable and a power cable to the diskette drive.
13. Connect the end of the hard drive data cable that is labeled **HD2/ZIP** and a power cable to the second hard drive.
14. Connect the other end of the hard drive data cable that is labeled **HD1** and a power cable to the first hard drive.
15. Make sure that all other cables are attached to the correct devices and that the cables are firmly seated.
16. Close the computer cover.
17. Turn on the computer.
18. Enter system setup and update the appropriate **Primary Drive** option, **0** or **1**.

    See "System Settings" for complete information on system setup.
19. Reset the chassis intrusion detector.
20. Restart the system.
21. Test the second hard drive by running the Dell Diagnostics.

    See "Solving Problems" for complete information.

When the procedure is complete, the drives should be arranged in the following order, from left to right as shown in the illustration "System Cables":

- Optical drive
- ZIP drive
- Diskette drive
- Second hard drive
- First hard drive

Diskette Drives

⚠ **CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety Information."**

Small Form-Factor Desktop System

- Removing the Diskette Drive
- Replacing the Diskette Drive

Small Desktop System

- Removing the Diskette Drive
- Replacing the Diskette Drive
- Attaching Cables

Small Mini-Tower System

- Removing the Diskette Drive
- Replacing the Diskette Drive
- Attaching Cables

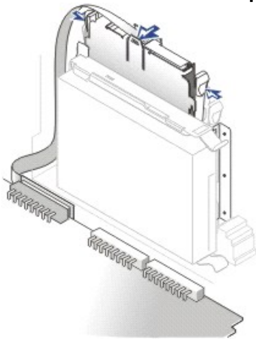
Removing the Diskette Drive—Small Form-Factor Desktop System

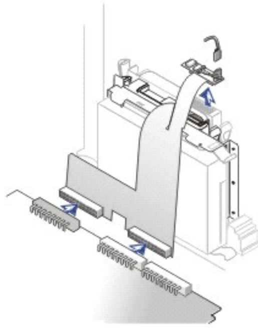
Select the appropriate instructions for the system:

- Removing the Diskette Drive With the Strip Cable

- Removing the Diskette Drive With the Combination Data Cable

Diskette Drive With the Strip Cable **Diskette Drive With the Combination Data Cable**

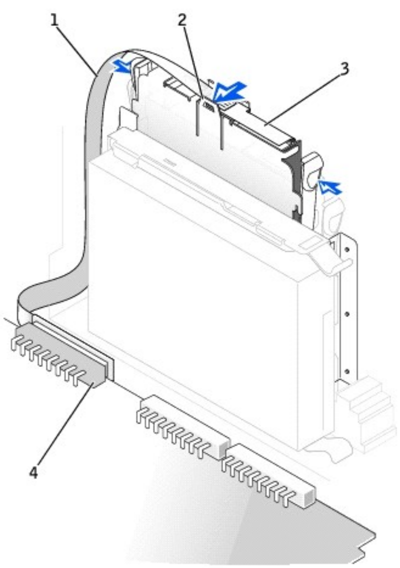




Removing the Diskette Drive With the Strip Cable

1. Disconnect the diskette-drive cable from the system board.
2. Remove the power cable from the interposer board.
3. Remove or raise the drive by pressing the green tabs on either side of the drive and lifting the drive up.
4. Remove the diskette-drive cable from the diskette drive.
   a. Remove the interposer board from the diskette drive by pressing the tab and rotating the interposer board.

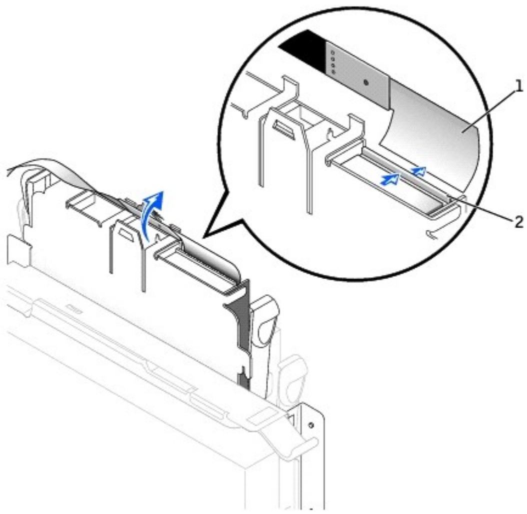
Removing the Interposer Board—Small Form-Factor Computer



1 Diskette-drive cable
2 Tab
3 Interposer board
4 System board diskette-drive connector (DSKT)

   b. To release the diskette-drive cable from the connector, slide the lever until it is fully extended, and then lift the cable away.

Removing the Diskette-Drive Cable

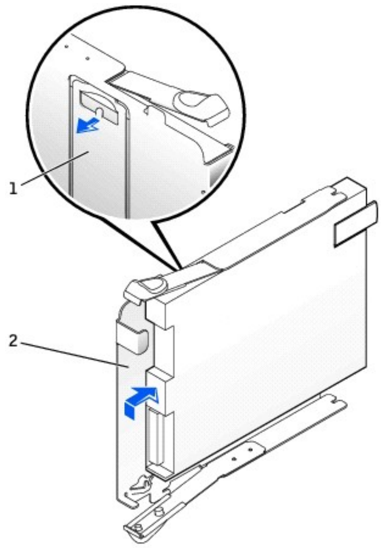


1 Diskette-drive cable

2 Lever

5. Remove the diskette drive from its sled by pulling the sled tab out while pushing the drive up, and then sliding the drive out of the sled.

Removing the Diskette Drive—Small Form-Factor Computer



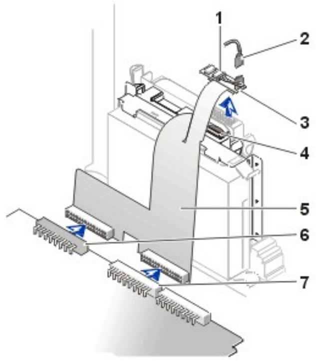
1 Sled tab

2 Sled

Removing the Diskette Drive With the Combination Data Cable

1. Open the computer cover.
2. Disconnect the combination data cable from the interface (IDE2) and diskette drive data connectors on the system board.

Removing the Cables on the Diskette Drive—Small-Form Factor System



1 Power cable

2 Audio cable

3 Optical interposer board

4 ZIF lever

5 Combination data cable

6 System board diskette-drive connector

7 System board interface connector (IDE2)

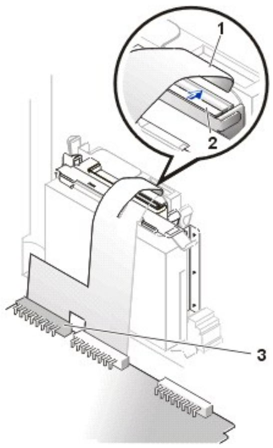
3. Disconnect the power cable and audio cable from the interposer board, and then remove the interposer board from the optical drive.

4. Press inward on the two tabs on the sides of the diskette drive to disengage the drive from the chassis, and then slide the drive upward and remove it from the chassis.

5. Disconnect the diskette drive data cable from the back of the drive by first releasing the ZIF lever.

   Once this lever is released, the cable is easily removed from the connector.

Removing the Diskette Drive Data Cable



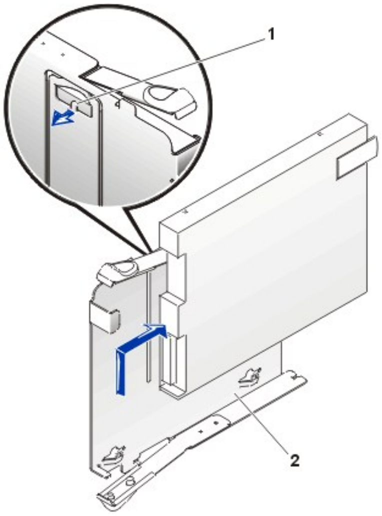
1 Diskette-drive data cable

2 ZIF lever

3 System board diskette-drive connector

6. Remove the diskette drive from the sled by pulling the sled tab out while pushing the drive up, and then sliding the drive out of the sled.

Removing and Replacing the Sled



1 Sled tab

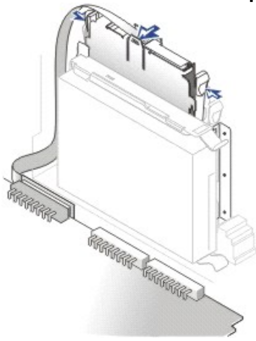
2 Sled

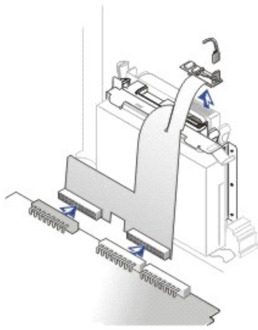
Replacing the Diskette Drive   Small Form-Factor Desktop System

Select the appropriate instructions for the system:

- Replacing the Diskette Drive With the Strip Cable
- Replacing the Diskette Drive With the Combination Data Cable

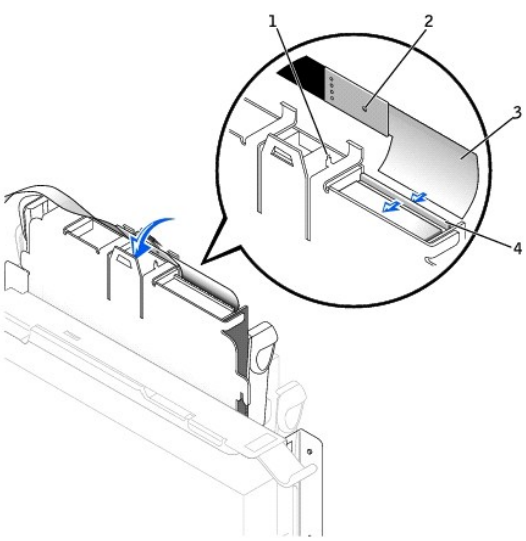
Diskette Drive With the Strip Cable   Diskette Drive With the Combination Data Cable





Replacing the Diskette Drive With the Strip Cable

1. Snap the replacement drive into the sled and ensure that it is secure in the sled.
2. Connect the interposer board to the diskette drive.
   a. Slide the diskette-drive cable into the connector.
   b. Close the lever so that the cable is secure in the connector.
   c. Line up the hole on the bottom of the interposer board with the notch on the connector, and snap the interposer board onto the drive.
3. Gently slide the drive into the computer until the tabs securely click into position.



1 Connector notch
2 Interposer board alignment hole
3 Diskette-drive cable
4 Lever

4. Attach the power cable to the interposer board on the diskette drive.
5. Connect the strip cable to the DSKT connector on the system board.
6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.
8. Enter system setup and update the appropriate **Diskette Drive A** option to reflect the size and capacity of your new diskette drive.

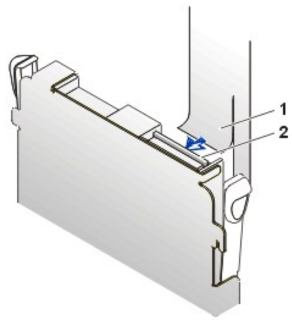
9. Verify that your computer works correctly by running the Dell Diagnostics.

Replacing the Diskette Drive With the Combination Data Cable

1. Snap the replacement drive into the sled and ensure that it is secure in the sled.

2. Attach the diskette drive data cable to the back of the diskette drive by inserting the cable into the connector and then sliding the ZIF lever to lock the cable into place.

Attaching the Diskette Drive Data Cable—Small Form-Factor System

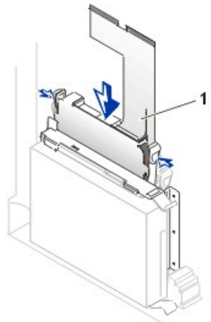


1 Diskette-drive data cable

2 ZIF lever

3. Gently slide the drive into the chassis until the tabs securely click into position.

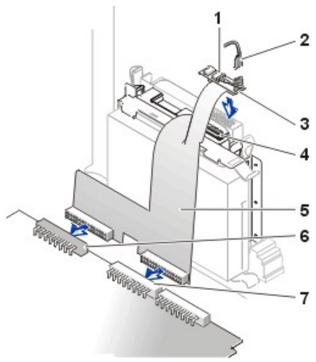
Replacing the Diskette Drive—Small Form-Factor System



1 Diskette-drive data cable

4. Connect the interposer board to the optical drive and connect the power cable and audio cable.

Attaching Cables—Small Form-Factor System



1 Power cable

2 Audio cable

3 Interposer board

4 ZIF lever

5 Combination data cable

6 System board diskette drive connector

7 System board interface connector (IDE2)

5. Connect the combination data cable to the diskette and interface (IDE2) connectors on the system board.

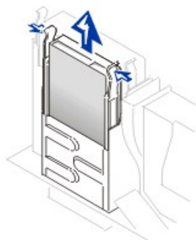
6. Close the computer cover.

Removing the Diskette Drive—Small Desktop and Small Mini-Tower System

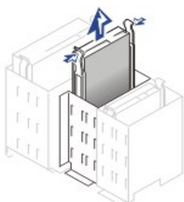
1. Open the computer cover.

2. Disconnect the power cable and the diskette drive data cable from the drive.
3. Press inward on the two tabs on the sides of the drive bay to disengage the bracket from the chassis.
4. Slide the drive upward, and remove it from the system.

Removing the Diskette Drive—Small Desktop System

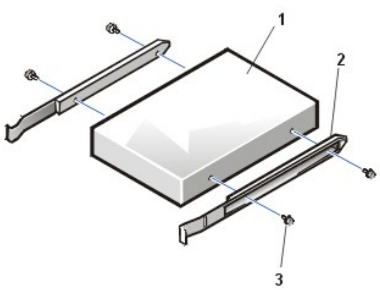


Removing the Diskette Drive—Small Mini-Tower System



5. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.
6. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

Removing and Replacing the Drive Bracket Rails

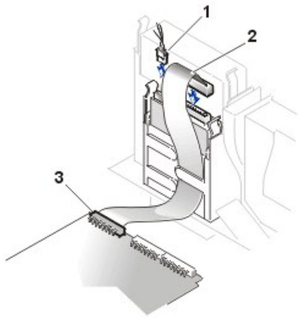


1 Drive
2 Bracket rails (2)
3 Screws (4)

Replacing the Diskette Drive—Small Desktop and Small Mini-Tower System

1. Ensure that bracket rails are attached to the new drive.
2. Gently slide the drive into place until the tabs securely click into position.
3. Attach the diskette drive data cable to the back of the diskette drive.
4. Connect the power cable to the power input connector on the drive.
5. If the drive was previously empty, remove the front-panel insert from the front panel.

Attaching Cables to a Diskette Drive—Small Desktop System

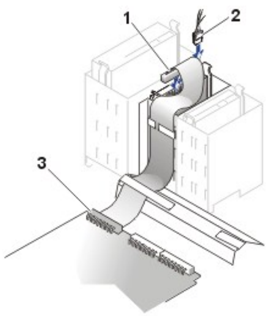


1 Power cable

2 Diskette drive data cable

3 Diskette drive system board connector

Attaching Cables to a Diskette Drive—Small Mini-Tower System



1 Power cable

2 Diskette drive data cable

3 Diskette drive system board connector

6. Close the computer cover.

Optical Drives

Small Form-Factor Desktop System

- Removing the Optical Drive
- Replacing the Optical Drive

Small Desktop System

- Removing the Optical Drive
- Replacing the Optical Drive
- Attaching Cables

Small Mini-Tower System

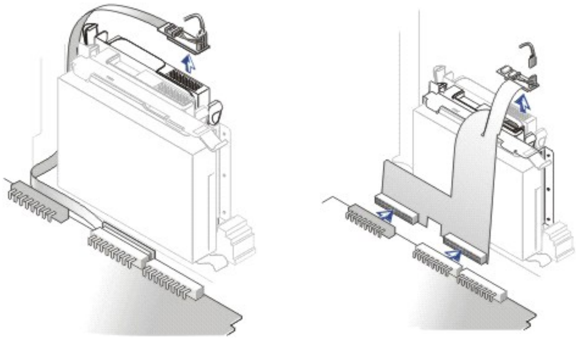
- Removing the Optical Drive
- Replacing the Optical Drive
- Attaching Cables

Removing the Optical Drive—Small Form-Factor Desktop System

Select the appropriate instructions for the system:

- Removing the Optical Drive With the Strip Cable
- Removing the Optical Drive With the Combination Data Cable

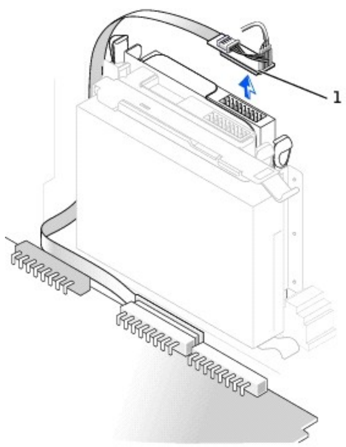
Optical Drive With the Strip Cable Optical Drive With the Combination Data Cable



Removing the Optical Drive With the Strip Cable

1. Remove the interposer board from the CD drive.

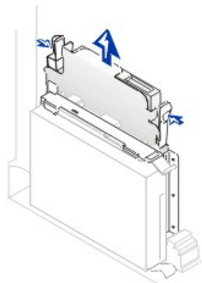
Removing the Interposer Board—Small Form-Factor System



1 Interposer board

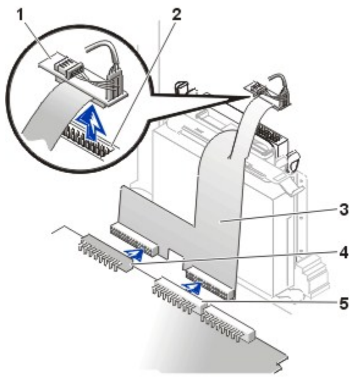
2. Press inward on the two tabs on the sides of the drive to disengage the drive from the computer.

Removing the Optical Drive With the Combination Data Cable



1. [Open the computer cover](#).
2. Remove the interposer board from the optical drive.

Removing Cables—Small Form-Factor Desktop System



1 Interposer board
2 Optical drive interface connector
3 Combination data cable
4 System board diskette drive connector
5 System board interface (IDE2) connector

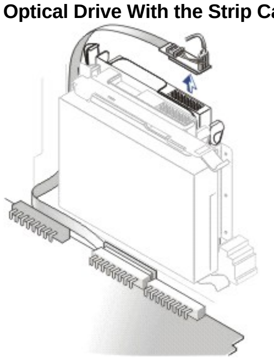
3. Press inward on the two tabs on the sides of the drive bay to disengage the drive from the system.

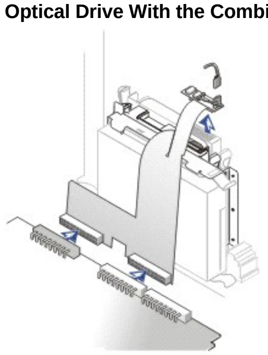
Replacing the Optical Drive Small Form-Factor System

Select the appropriate instructions for the system:

- Replacing the Optical Drive With the Strip Cable
- Replacing the Optical Drive With the Combination Data Cable

Optical Drive With the Strip Cable Optical Drive With the Combination Data Cable





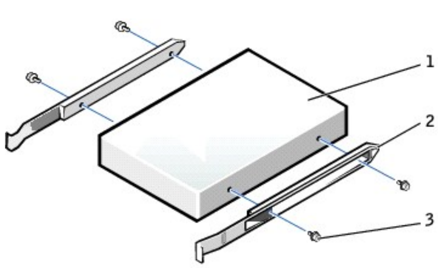
Replacing the Optical Drive With the Strip Cable

1. If you are replacing a drive that does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails, and then tightening all four screws (two screws for each rail).

2. If you are installing a new drive, connect it to the set of rails that are attached to the inside of the cover.

If a set of rails is not attached to the inside of the cover, contact Dell.

CD Drive Bracket Rails

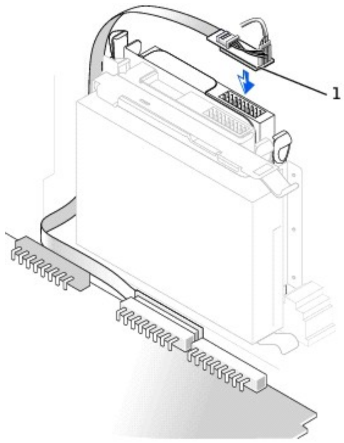


1 Drive
2 Bracket rails (2)
3 Screws (4)

3. Gently slide the drive into place until the tabs securely click into position.

4. Connect the interposer board to the CD drive, ensuring that the data, power, and audio cables are attached to the interposer board.

Connecting the Interposer Board—Small Form-Factor System

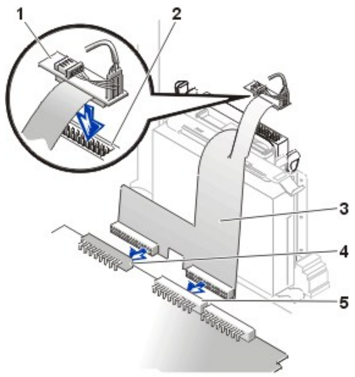


1 Interposer board

Replacing the Optical Drive With the Combination Data Cable

1. Gently slide the drive into place until the tabs securely click into position.
2. Connect the interposer board to the optical drive.
3. Close the computer cover.

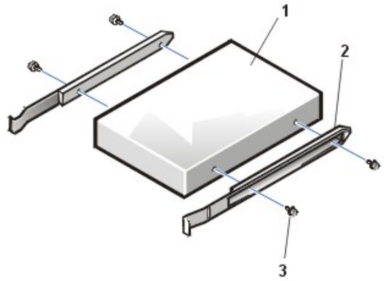
Attaching Cables to an Optical Drive—Small Form-Factor Desktop System



1 Interposer board
2 Optical drive interface connector
3 Combination data cable
4 System board diskette drive connector
5 System board interface (IDE2) connector

Removing the Optical Drive—Small Desktop System and Small Mini-Tower System

Removing and Replacing the Drive Bracket Rails—Small Desktop and Small Mini-Tower System



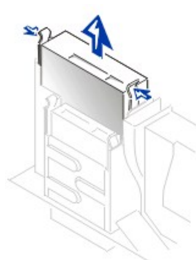
1 Drive
2 Bracket rails (2)
3 Screws (4)

If you are replacing an optical drive and bracket assembly, follow these instructions. If you are installing a new drive that does not have bracket rails attached, connect it to the set of rails that are attached to the inside of the cover.

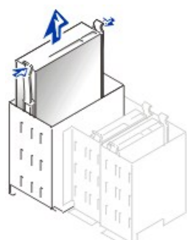
NOTE: If there are no screws with the bracket in the small mini-tower system, contact Dell. See "Contacting Dell" for information on contacting Dell.

1. Open the computer cover.
2. Remove the optical drive data cable from the optical drive.
3. Remove the optical drive power cable and audio cable from the optical drive.
4. Press inward on the two tabs on the sides of the drive bay to disengage the drive from the system.

Removing the Optical Drive Small Desktop System



Removing the Optical Drive Small Mini-Tower System



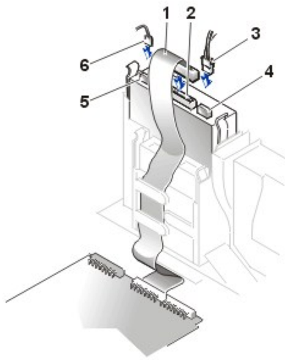
5. Slide the drive upward and remove it from the system.
6. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.
7. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

Replacing the Optical Drive—Small Desktop and Small Mini-Tower System

1. Reinstall the optical drive and bracket assembly in the system by gently sliding the drive into place until the tabs securely click into position.
2. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.
3. Connect the optical drive power cable and audio cable to the optical drive.
4. Connect the optical drive data cable to the optical drive.

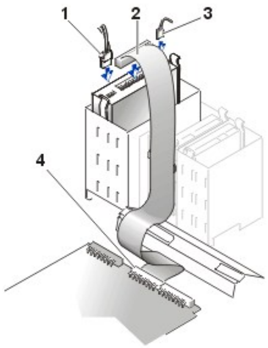
   If your system came with an EIDE CD drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE interface cable provided in the drive kit.

Attaching Cables to an Optical Drive—Small Desktop System



1 Optical drive data cable
2 Optical drive interface connector
3 Power cable
4 Power connector
5 Audio connector
6 Audio cable

Attaching Cables to an Optical Drive—Small Mini-Tower System



1 Power connector
2 Optical drive data cable
3 Audio connector
4 System board interface connector (IDE2)

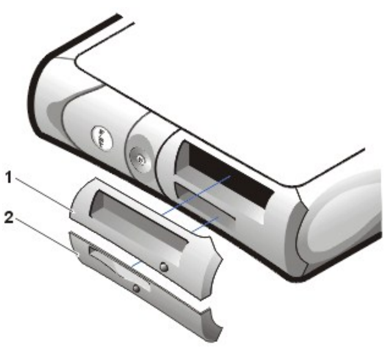
NOTE: If you install a second optical device, do not route the cable through the plastic clips on the side of the diskette drive bay.

5. If the drive was previously empty, remove the front-panel insert from the front panel.
6. Close the computer cover.

Front-Panel Inserts (Small Desktop and Small Mini-Tower Chassis)

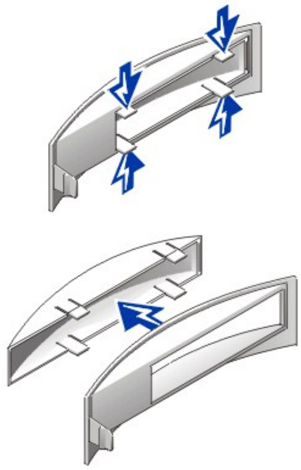
Removing Front-Panel Inserts—Small Desktop Chassis

1. Facing the front of the computer, use your fingers to remove the front-panel cover.



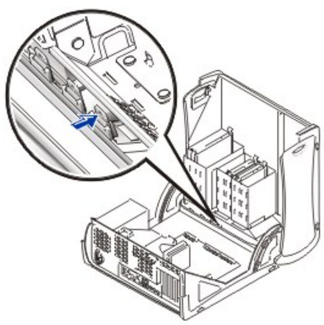
1 Optical drive front-panel cover
2 Diskette drive front-panel cover

2. Press on the insert until it pops free of the front-panel cover.



Removing Front-Panel Inserts—Small Mini-Tower Chassis

1. Open the computer cover to a 45-degree angle and disconnect the optical drive data cable.
2. Open the cover to a 90-degree angle and release the insert tabs from inside the chassis.



3. Press on the insert until it pops free of the front-panel cover.

Replacing Front-Panel Inserts

To replace a front-panel insert, follow the "Removing Front-Panel Inserts" procedures in reverse.

Battery

A 3.0-V CR2032 lithium coin-cell battery installed on the system board maintains system configuration, date, and time information in a special section of memory.

The operating life of the battery can extend up to ten years. The battery may need replacing if an incorrect time or date is displayed during the boot routine along with a message such as:

```
Time-of-day not set - please run SETUP program
```

or

```
Invalid configuration information -
please run SETUP program
```

or

```
Strike the F1 key to continue,
F2 to run the setup utility
```

To determine whether you need to replace the battery, reenter the time and date through system setup and exit the program properly to save the information. Turn off your system and disconnect it from the electrical outlet for a few hours; then reconnect the system, turn it on, and enter system setup. If the date and time are not correct in system setup, replace your battery.

You can operate your system without a battery; however, without a battery, the system configuration information is erased if the system is turned off or unplugged from the electrical outlet. In this case, you must enter system setup and reset the configuration options.

CAUTION: There is a danger of the new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Replacing the Battery

To replace the system battery, perform the following steps:

1. If you have not already done so, make a copy of your system configuration information in system setup.

   If the settings are lost while you are replacing the battery, refer to your written or printed copy of the system configuration information to restore the correct settings.

CAUTION: Before you open the computer cover, see "Safety Information."

2. Open the computer cover.

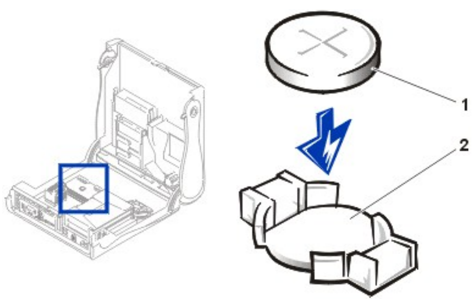
NOTICE: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Make certain that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

3. Remove the battery by prying it out of its socket with your fingers or with a blunt, nonconductive object, such as a plastic screwdriver.

   See the system board figure for the location of the battery.

4. Install the new battery.
   a. Orient the battery with the side labeled "+" facing up.
   b. Insert the battery into the socket, and snap it into place.

Replacing the System Battery



1 Battery

2 Battery socket

5. Close the computer cover, reconnect your computer and peripherals to their electrical outlets, and turn them on.
6. Enter system setup, and confirm that the battery is operating properly.
   a. Enter the correct time and date through system setup's **System Time** and **System Date** options.
   b. Use the copy of the system configuration information that you made in step 1 to restore the correct settings for other system setup options.
   c. Exit system setup.
7. Turn off and unplug your computer, and leave it unplugged for at least 10 minutes.
8. After 10 minutes, plug in the computer turn it on, and enter system setup. If the time and date are still incorrect, see "Getting Help" for instructions on obtaining technical assistance.

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Limited Warranty and Return Policy: Dell™ OptiPlex™ GX150 Systems User's Guide

The following sections describe the limited warranty for your computer, the manufacturer guarantee for Latin America and the Caribbean, and the return policy for the U.S.

Three-Year Limited Warranty (U.S. Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The limited warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this limited warranty. Otherwise, this limited warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This limited warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or Dell Software and Peripherals products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this limited warranty; all other monitors, keyboards, and mice (including those sold through the Dell Software and Peripherals program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this limited warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must contact Dell's Customer Technical Support within the warranty period. See "Contacting Dell" to find the appropriate contact information for obtaining customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in the continental U.S., where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as floppy disks, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts (freight prepaid) if you use an address in the continental U.S., where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General Provisions

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS LIMITED WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER SUCH PERIOD.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE

PRECEDING LIMITATION MAY NOT APPLY TO YOU.

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS LIMITED WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's three-year limited warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the limited warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard three-year limited warranty described in the preceding text, the option you chose will be listed on your invoice.

Three-Year Limited Warranty (Canada Only)

Dell Computer Corporation ("Dell") manufactures its hardware products from parts and components that are new or equivalent to new in accordance with industry-standard practices. Dell warrants that the hardware products it manufactures will be free from defects in materials and workmanship. The limited warranty term is three years beginning on the date of invoice, as described in the following text.

Damage due to shipping the products to you is covered under this limited warranty. Otherwise, this limited warranty does not cover damage due to external causes, including accident, abuse, misuse, problems with electrical power, servicing not authorized by Dell, usage not in accordance with product instructions, failure to perform required preventive maintenance, and problems caused by use of parts and components not supplied by Dell.

This limited warranty does not cover any items that are in one or more of the following categories: software; external devices (except as specifically noted); accessories or parts added to a Dell system after the system is shipped from Dell; accessories or parts added to a Dell system through Dell's system integration department; accessories or parts that are not installed in the Dell factory; or Dell Software and Peripherals products. Monitors, keyboards, and mice that are Dell-branded or that are included on Dell's standard price list are covered under this limited warranty; all other monitors, keyboards, and mice (including those sold through the Dell Software and Peripherals program) are not covered. Batteries for portable computers are covered only during the initial one-year period of this limited warranty.

Coverage During Year One

During the one-year period beginning on the invoice date, Dell will repair or replace products covered under this limited warranty that are returned to Dell's facility. To request warranty service, you must contact Dell's Customer Technical Support within the warranty period. See "Contacting Dell" to find the appropriate telephone number for obtaining customer assistance. If warranty service is required, Dell will issue a Return Material Authorization Number. You must ship the products back to Dell in their original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk of loss or damage during shipment. Dell will ship the repaired or replacement products to you freight prepaid if you use an address in Canada, where applicable. Shipments to other locations will be made freight collect.

NOTE: Before you ship the product(s) to Dell, back up the data on the hard drive(s) and any other storage device(s) in the product(s). Remove any removable media, such as floppy disks, CDs, or PC Cards. Dell does not accept liability for lost data or software.

Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Dell repairs or replaces a product, its warranty term is not extended.

Coverage During Years Two and Three

During the second and third years of this limited warranty, Dell will provide, on an exchange basis and subject to Dell's Exchange Policy in effect on the date of the exchange, replacement parts for the Dell hardware product(s) covered under this limited warranty when a part requires replacement. You must report each instance of hardware failure to Dell's Customer Technical Support in advance to obtain Dell's concurrence that a part should be replaced and to have Dell ship the replacement part. Dell will ship parts (freight prepaid) if you use an address in Canada, where applicable. Shipments to other locations will be made freight collect. Dell will include a prepaid shipping container with each replacement part for your use in returning the replaced part to Dell. Replacement parts are new or reconditioned. Dell may provide replacement parts made by various manufacturers when supplying parts to you. The warranty term for a replacement part is the remainder of the limited warranty term.

You will pay Dell for replacement parts if the replaced part is not returned to Dell. The process for returning replaced parts, and your obligation to pay for replacement parts if you do not return the replaced parts to Dell, will be in accordance with Dell's Exchange Policy in effect on the date of the exchange.

You accept full responsibility for your software and data. Dell is not required to advise or remind you of appropriate backup and other procedures.

General Provisions

DELL MAKES NO EXPRESS WARRANTIES OR CONDITIONS BEYOND THOSE STATED IN THIS LIMITED WARRANTY STATEMENT. DELL DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES (OR JURISDICTIONS) DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES OR CONDITIONS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

DELL'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR AND REPLACEMENT AS SET FORTH IN THIS LIMITED WARRANTY STATEMENT. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION).

DELL DOES NOT ACCEPT LIABILITY BEYOND THE REMEDIES SET FORTH IN THIS LIMITED WARRANTY STATEMENT OR LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION ANY LIABILITY FOR PRODUCTS NOT BEING AVAILABLE FOR USE OR FOR LOST DATA OR SOFTWARE.

SOME STATES (OR JURISDICTIONS) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE PRECEDING EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU.

These provisions apply to Dell's three-year limited warranty only. For provisions of any service contract covering your system, refer to your invoice or the separate service contract that you will receive.

If Dell elects to exchange a system or component, the exchange will be made in accordance with Dell's Exchange Policy in effect on the date of the exchange. In any instance in which Dell issues a Return Material Authorization Number, Dell must receive the product(s) for repair prior to the expiration of the warranty period in order for the repair(s) to be covered by the limited warranty.

NOTE: If you chose one of the available warranty and service options in place of the standard three-year limited warranty described in the preceding text, the option you chose will be listed on your invoice.

One-Year End-User Manufacturer Guarantee (Latin America and the Caribbean Only)

Guarantee

Dell Computer Corporation ("Dell") warrants to the end user in accordance with the following provisions that its branded hardware products, purchased by the end user from a Dell company or an authorized Dell distributor in Latin America or the Caribbean, will be free from defects in materials, workmanship, and design affecting normal use, for a period of one year from the original purchase date. Products for which proper claims are made will, at Dell's option, be repaired or replaced at Dell's expense. Dell owns all parts removed from repaired products. Dell uses new and reconditioned parts made by various manufacturers in performing repairs and building replacement products.

Exclusions

This Guarantee does not apply to defects resulting from: improper or inadequate installation, use, or maintenance; actions or modifications by unauthorized third parties or the end user; accidental or willful damage; or normal wear and tear.

Making a Claim

Claims must be made in Latin America or the Caribbean by contacting the Dell point of sale within the guarantee period. The end user must always supply proof of purchase, indicating name and address of the seller, date of purchase, model and serial number, name and address of the customer, and details of symptoms and configuration at the time of malfunction, including peripherals and software used. Otherwise, Dell may refuse the guarantee claim. Upon diagnosis of a warranted defect, Dell will make arrangements and pay for ground freight and insurance to and from Dell's repair/replacement center. The end user must ensure that the defective product is available for collection properly packed in original or equally protective packaging together with the details listed above and the return number provided to the end user by Dell.

Limitation and Statutory Rights

Dell makes no other warranty, guarantee or like statement other than as explicitly stated above, and this Guarantee is given in place of all other guarantees whatsoever, to the fullest extent permitted by law. In the absence of applicable legislation, this Guarantee will be the end user's sole and exclusive remedy against Dell or any of its affiliates, and neither Dell nor any of its affiliates shall be liable for loss of profit or contracts, or any other indirect or consequential loss arising from negligence, breach of contract, or howsoever.

This Guarantee does not impair or affect mandatory statutory rights of the end-user against and/or any rights resulting from other contracts concluded by the end-user with Dell and/or any other seller.

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Dell Computer de Mexico SA de CV
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"Total Satisfaction" Return Policy (United States Only)

If you are an end-user customer who bought new products directly from a Dell company, you may return them to Dell within 30 days of the date of invoice for a refund or credit of the product purchase price. If you are an end-user customer who bought reconditioned or refurbished products from a Dell company, you may return them to Dell within 14 days of the date of invoice for a refund or credit of the product purchase price. In either case, the refund or credit will not include any shipping and handling charges shown on your invoice. If you are an organization that bought the products under a written agreement with Dell, the agreement may contain different terms for the return of products than specified by this policy.

To return products, you must contact Dell Customer Service to receive a Credit Return Authorization Number. See "Contacting Dell" to find the appropriate contact information for obtaining customer assistance. To expedite the processing of your refund or credit, Dell expects you to return the products to Dell in their original packaging within five days of the date that Dell issues the Credit Return Authorization Number. You must also prepay shipping charges and insure the shipment or accept the risk of loss or damage during shipment. You may return software for refund or credit only if the sealed package containing the floppy disk(s) or CD(s) is unopened. Returned products must be in as-new condition, and all of the manuals, floppy disk(s), CD(s), power cables, and other items included with a product must be returned with it. For customers who want to return, for refund or credit only, either applications software or an operating system that has been installed by Dell, the whole system must be returned, along with any media and documentation that may have been included in the original shipment.

This "Total Satisfaction" Return Policy does not apply to Dell Software and Peripherals products, which may be returned under Dell Software and Peripherals' then-current return policy. The "Total Satisfaction" Return Policy also does not apply to Dell | EMC storage products.

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Microsoft® Windows® XP Features: Dell OptiPlex™ GX150 System User's Guide

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Overview

Based on an enhanced version of the Windows 2000 operating system, Windows XP is available in consumer and business editions: Windows XP Home Edition and Windows XP Professional. The features discussed are available in both editions, but the Professional version, designed for business environments, includes additional productivity, security, networking, and management features important in business environments.

For home users, Windows XP brings the significantly increased stability and security inherent in the Windows 2000/Windows NT® operating systems. It also provides better support for portable computers. Key new Windows XP features include:

- An improved desktop and user interface
- Files and Settings Transfer Wizard
- Application program compatibility enhancements
- System Restore
- Fast User Switching*
- Expanded home and small office networking functions*
- A personal firewall for always-on Internet connections*

*Home and small office features

Help and Support Center

The Help and Support Center, introduced with Microsoft Windows Millennium Edition (Me), replaces Windows Help from earlier operating systems. The Help and Support Center provides an integrated resource center for information and assistance in using, configuring, and troubleshooting your computer and installed hardware devices and software. For Windows XP, the Help and Support Center features expanded search capabilities, including full-text search and the capability to search across multiple remote sites in addition to files resident on the hard drive. You can use a single print command to print an entire chapter of help content.

To open Help and Support Center, click the **Start** button, and then click **Help and Support**. From the home page, you can conduct a search or select categories of information, leading to task and information topics covering the use of your computer. Click **User and System Guides** for information on using your Dell™ computer, including installed hardware devices and software.

New User Interface

Windows XP features a redesigned user interface with a new visual style, a less cluttered desktop, and built-in desktop cleanup features. Window layout has also been changed for Windows XP and, as in the Control Panel, emphasizes task presentation. The **Start** menu has been redesigned. The left half of the new **Start** menu includes the most frequently used icons. As you use your computer, the icons in this area are changed and rearranged depending on your computer usage patterns. If you wish to keep one of the icons permanently in its location, right-click the icon and click **Pin to Start menu**.

To access all the programs installed on the computer, click **All Programs** at the bottom of the **Start** menu. The right half of the new **Start** menu contains useful icons for accessing your files, configuring the computer, and finding information and assistance. The **Dell Solution Center** icon opens a portal to services and application programs installed on your Dell computer.

Switching to Classic View

If you wish, you may change the appearance of the **Start** menu, desktop and windows, or **Control Panel** layout to that of earlier Windows operating systems. These classic view options are independent of each other.

You can easily switch back and forth between the new Control Panel category view and the classic icon view by clicking **Switch to Classic View** or **Switch to Category View** in the upper left area of the **Control Panel** window. This can be handy if you would like to take advantage of the new, task-oriented features of the Windows XP Control Panel, but you are accustomed to performing a particular task with the icon-oriented classic Control Panel.

To change the appearance of the **Start** menu to the classic view:

1. Right-click the empty area on the task bar.
2. Click **Properties**.
3. Click the **Start Menu** tab.
4. Select **Classic Start Menu** and click **OK**.

If you prefer the classic window and button appearance, perform the following steps:

1. Right-click anywhere on the main desktop screen and click **Properties**.
2. Click the **Appearance** tab.
3. From the **Windows and buttons** dropdown box, select **Windows Classic style**.
4. To customize color, font, and other classic desktop options, click **Advanced**.
5. When you have completed your appearance selections, click **OK**.

Clean Desktop Wizard

Another feature of Windows XP is the Desktop Cleanup Wizard. The wizard runs 7 days after you first start your computer and every 60 days after that. The Desktop Cleanup Wizard first opens a dialog box informing you that there are unused icons on the desktop and asking whether you want to run the wizard. If you elect to run the wizard, it places unused desktop icons in a folder.

The default for the Desktop Cleanup Wizard is on. To turn the wizard off:

1. Right-click anywhere on the main desktop screen and click **Properties**.
2. Select the **Desktop** tab and click **Customize Desktop**.
3. In the **Desktop cleanup** options make sure that the **Run Desktop Cleanup Wizard every 60 days** box is not checked.

You can run the Desktop Cleanup Wizard anytime by following these steps:

1. Right-click anywhere on the main desktop screen and select **Properties**.
2. Click the **Desktop** tab and click **Customize Desktop**.
3. Click **Clean Desktop Now**.
4. When the **Desktop Cleanup Wizard** appears, click **Next>**.
5. In the **Shortcuts** list, deselect any shortcuts you want to leave on the desktop, and then click **Next>**.
6. Click **Finish** to remove the shortcuts and close the wizard.

Taskbar Grouping

The Windows taskbar is a row of buttons that typically displays across the bottom of the screen. The taskbar includes the **Start** button and a button for each open application. (The taskbar also includes the Quick Launch icons and the notification area.) Windows XP groups multiple instances of the same application on the taskbar. For example, if six instances of Internet Explorer are open, each displaying a button on the taskbar, Windows XP groups the buttons next to one another on the taskbar. If space becomes an issue on the taskbar, Windows XP consolidates all the Internet Explorer buttons into a single button. When clicked, that button expands to a menu of the six Internet Explorer active sessions.

Notification Area Cleanup

Over time, software icons tend to proliferate in the notification area, the area in the bottom right corner of the Windows desktop. Windows XP detects when icons in the notification area are not being accessed and hides them. A caret, or chevron, button indicates that there are hidden icons that can be viewed by selecting the button. You can also configure the notification area manually by right-clicking the taskbar, selecting **Properties**, and then clicking **Customize...** in the **Taskbar and Start Menu Properties** window. For example, you may choose to hide the antivirus program icon because it is rarely accessed, but display the audio volume icon because it is used frequently. The notification area cleanup feature is automatically enabled when the operating system is installed, but you may disable it by unchecking **Hide inactive icons** in the **Taskbar and Start Menu Properties** window.

Files and Settings Transfer Wizard

The Files and Settings Transfer Wizard is used to migrate personal files and settings from one computer to another (for instance, when upgrading to a new computer). Personal files include the documents, images, spreadsheets, presentations, and e-mail messages on your computer. User settings include display properties, window sizes, toolbar settings, dial-up connections, Internet bookmarks, and so forth on your computer. The Files and Settings Transfer Wizard is run on a source (old) computer to collect the data and is run again on the destination (new) computer to

import the data. If the old computer is using an earlier operating system, the wizard can be launched either from the Windows XP CD or from a diskette created on the new Windows XP computer. You transfer the data to the new computer over a network or direct serial connection, or store it on a removable medium such as a floppy disk, Zip disk, or writable CD.

To use the Files and Settings Transfer Wizard:

1. On the new Windows XP computer, click the **Start** button, point to **All Programs—> Accessories—> System Tools**, and click **Files and Settings Transfer Wizard**.

2. On the **Files and Settings Transfer Wizard** welcome screen, click **Next>**.

3. On the **Which computer is this?** screen, select **New Computer**, and then click **Next>**.

   The **Do you have a Windows XP CD?** screen appears.

The Files and Settings Transfer Wizard guides you through the steps necessary to transfer user settings, personal files, or both to the new computer. If a CD drive is not available, the wizard allows you to create a wizard diskette to run on your old computer.

NOTE: The time required to collect and transfer data depends on the amount of data collected. Times can vary from just a few minutes to several hours.

Application and Device Compatibility

Although Windows XP is designed to be compatible with a wide range of application programs and hardware devices, some older programs and devices may not be usable. Check the Microsoft Web site at **www.microsoft.com** for application programs and hardware devices known to be compatible. When buying new software and devices, look for those that are labeled as ready for Windows XP. If you encounter problems using an application program designed for an earlier Windows operating system, Windows XP provides a compatibility mode feature (see "Program Compatibility Wizard"). If you are unsuccessful at installing application programs or hardware devices designed to operate on earlier Windows operating systems, contact the manufacturer of the product for information or updates for Windows XP.

Windows XP also includes a new technology that addresses the problems sometimes encountered on previous operating systems with Windows application programs that, when installed, replace current versions of certain Windows files with older versions. This situation can cause problems with the newer application programs, which rely on the replaced files. To eliminate this problem and improve operating system stability, Windows XP manages multiple versions of files and invokes the correct version required by a program.

NOTE: If you experience problems with your operating system or other applications after performing an installation, you can use System Restore to return your computer to a previous stable condition.

Program Compatibility Wizard

A program compatibility feature is provided in Windows XP that solves some issues that may be encountered when attempting to run older application programs. Using the Program Compatibility Wizard, you can configure a program to run in an environment closer to Windows 95, Windows 98/Me, Windows NT 4.0 with Service Pack 5, or Windows 2000.

To use the Program Compatibility Wizard:

1. Click the **Start** button, point to **All Programs—> Accessories**, and click **Program Compatibility Wizard**.

2. When the Program Compatibility Wizard appears, click **Next>**.

3. Select how you want to locate the program to run with compatibility settings: from a list, available on a CD, or manually located. Then click **Next>**.

4. Select the type of operating system for which the program was designed or on which it ran successfully, and then click **Next>**.

5. If necessary, as for some games, select display settings for the program.

6. Click **Next>**.

7. To test the compatibility settings for the program, click **Next>**.

   After you have determined whether the program is running correctly, return to the **Program Compatibility Wizard** window.

8. Select **Yes** if the program ran correctly, **No, try different compatibility settings**, or **No, I am finished trying compatibility settings** and click **Next>**.

9. Select either **Yes** to send information about the settings you used and whether they fixed the problem, or select **No**, and then click **Next>**.

10. Click **Finish** to close the wizard.

System Restore

The System Restore feature of Windows XP provides the capability to restore the operating system, in the event of a problem, to a previous state without losing personal data files (such as Word documents, drawings, or e-mail).

System Restore actively monitors system file changes and some application file changes to record or store previous versions before the changes occurred. System Restore maintains a rolling record of restore points; to limit the amount of space used, older restore points are purged to make room for newer ones.

In the event of a serious operating system problem, System Restore can be used from Safe Mode or Normal Mode to go back to a previous system state, restoring optimal system functionality.

NOTES: System Restore does not revert user data or document files, so restoring does not cause loss of work, mail, or browsing history and favorites.

Dell recommends that you make regular backups of your data files. System Restore does not monitor changes to or recover your data files. In the event the original data on the hard drive is accidentally erased or overwritten or becomes inaccessible because of a hard-drive malfunction, backup files are required to recover lost or damaged data.

Using System Restore

System Restore monitors a core set of system and application program files, recording and sometimes copying states of these files before changes are made. System Restore automatically creates restore points; no user intervention is required. In addition, you can create restore points manually, if desired.

Restore points are created to allow you to choose previous system states. Each restore point gathers the necessary information needed to restore to a precisely chosen system state. There are three types of restore points:

- System (automatically created) restore points (scheduled by your computer)
- Installation (event-triggered) restore points (when a program is installed)
- Manual restore points (created by you as needed)

Scheduled Automatic Restore Points

By default, System Restore creates a restore point every day that the computer is running. If your computer is off for more than a day, a new restore point is created the next time you turn the computer on.

Event-Triggered Restore Points

Event-triggered restore points are created before key changes are made to the system. System Restore automatically creates a restore point before the following events:

- *Application installations* — System restore creates a restore point before you install an application program designed for Windows XP. You may wish to create a manual restore point before attempting to install an older program.
- *AutoUpdate installation* — When you choose to install the update, System Restore creates a restore point before the actual installation of the update begins.
- *Restore operation* — The restore operation itself also creates a restore point for undo purposes.
- *Microsoft Backup Utility recovery* — Before Microsoft Backup Utility (only available in Windows XP Professional) performs a backup recovery, System Restore creates a restore point.
- *Unsigned driver installation* — The INF installer of Windows detects unsigned device-driver installations. Drivers that are signed (electronically certified by the device manufacturer) do not generate a restore point.

Manual Restore Points

If you are logged on to the computer as computer administrator or as a user with administrator rights, you may create and name an on-demand restore point. (For information on types of user accounts, see "How to Add Users.") This is useful to create a checkpoint to return to before making a particularly risky change, before leaving a shared system to other users, or at a particular state you believe is optimal.

To create a restore point, perform the following steps:

1. Click the **Start** button, point to **All Programs—> Accessories—> System Tools**, and then click **System Restore**.
2. Select **Create a restore point** and click **Next>**.
3. Type a description of the restore point and click **Create**.

   The date and time are automatically added to the description of the new restore point.

Restore Process

As the computer is used over time, restore points are collected in the archive without any management or intervention. If you encounter operating

system problems, you can use the System Restore feature to select any of the restore points presented through the System Restore Wizard.

If problems occur after installing a device driver, you should first attempt to use Driver Rollback. If that is unsuccessful, then use System Restore.

To return your computer to a previous, stable condition, perform the following steps:

1. Click the **Start** button, point to **All Programs—> Accessories—> System Tools**, and then click **System Restore**.
2. Select **Restore my computer to an earlier time** and click **Next>**.

   The **Select a Restore Point** screen appears. The calendar on the left indicates in bold the dates on which restore points were created.

3. Click a date, click a restore point for that date, and click **Next>**.
4. Click **Next>** to confirm the restore point selection and complete the restore process.

   After System Restore finishes collecting data, the computer automatically restarts and the **Restoration Complete** screen appears.

5. Click **OK**.

   If you are not satisfied with the results of the restoration, you can repeat the preceding steps, using a different restore point, or you can undo the restoration.

To undo a restoration, perform the following steps:

1. Click the **Start** button, point to **All Programs—> Accessories—> System Tools**, and then click **System Restore**.
2. Select **Undo my last restoration** and click **Next>**.
3. Click **Next>** to confirm the restoration undo.

   After System Restore finishes collecting data, the computer automatically restarts and the **Undo Complete** screen appears.

4. Click **OK**.

Driver Rollback

Windows XP device Driver Rollback can replace a device driver with the previously installed version. When you install a new device driver that causes system instability, use Driver Rollback to reinstall the previous drivers. In the event that Driver Rollback cannot reinstall your previous driver, you can use System Restore to return your operating system to its state before the new device driver installation.

To use Driver Rollback, perform the following steps:

1. Click the **Start** button, and then right-click **My Computer**.
2. Click **Properties**.
3. Click the **Hardware** tab, and then click **Device Manager**.
4. In the **Device Manager** window, right-click the device for which the new driver was installed, and then click **Properties**.
5. Click the **Drivers** tab, and then click **Roll Back Driver**.

User Accounts and Fast User Switching

NOTE: Fast User Switching is the default user screen for both Home and Professional editions, but is disabled in Windows XP Professional when the computer is a member of a computer domain.

Microsoft Windows XP includes a new feature that provides multiuser access to a single computer. Fast User Switching, which is available in both the Home and Professional editions, allows users to access the computer with their specific settings, including the desktop and various applications, without requiring the previous user to log off. New users log on and switch from the original user's session to their own. New users can run their desktop and applications without interfering with the original user. When the original user returns, that user can switch back to the desktop and applications with the original settings. All of this is accomplished without the delay of each individual user logging off the computer.

During setup, the computer administrator creates all the accounts that will be used on the computer. (For information on types of accounts and adding new accounts, see "How to Add Users.") When the computer starts, the main user screen appears with all of the user names. From this screen you select an account and log in to that session.

How to Use Fast User Switching

To access Fast User Switching, perform the following steps:

1. Click the **Start** button and click **Log Off**.

2. When the **Log Off Windows** screen appears, click either **Switch User** or **Log Off**.

When you select **Switch User**, the main user screen appears. You can then select your account name and log in. Your personal desktop appears.

What Happens When a Fast User Switch Occurs?

When a fast user switch occurs, the original user is not logged off the computer as previously happened on other Microsoft operating systems. On Windows XP, the user's logon remains active, but is replaced by the new user. Users can switch between login IDs as often as they want.

However, user applications active during a user switch remain active and running in the background while the new user is working; this can result in a slower computer until the process finishes. For example, if one user is downloading a large file from the Internet and another user logs on to the computer, the file download continues in the background until it is complete.

While most applications continue to run in the background during a fast user switch, multimedia applications do not. Because multimedia applications use resources that cannot easily be shared between different users on a single computer, those applications terminate during the user switch, allowing the new user to take full advantage of the multimedia capabilities.

Special Considerations With Fast User Switching

Considerations when using Fast User Switching include:

- Some older Windows games may not operate with a fast user switch.
- Multimedia games may shut down on a fast user switch.
- DVD software shuts down and requires a restart when the user comes back.
- Computers with low memory configurations can experience problems. The computer uses memory to keep the first user's programs running in the background while the second user is logged on. On computers with limited memory, this can cause the entire computer to run slowly. Fast User Switching is off by default on computers with less than 128 megabytes (MB) of random-access memory (RAM).

Fast User Switching is unavailable if the computer has Windows XP Professional installed and is a member of a computer domain.

How to Turn Off Fast User Switching

You must have a computer administrator account on the computer to turn off Fast User Switching. (For information on types of accounts, see "How to Add Users.")

To disable Fast User Switching, perform the following steps:

1. Click the **Start** button, and click **Control Panel**.

2. In the **Control Panel** window, click **User Accounts**.

3. Under **Pick a task**, click **Change the way users log on or off** and do one of the following:

   - Select the **Use Fast User Switching to log off** check box to enable Fast User Switching.
   - Deselect the **Use Fast User Switching to log off** check box to disable Fast User Switching.

4. Click **Apply Options**.

How to Add Users

Only a computer administrator or a user with administrator rights can create multiple user accounts. The individual who performs the initial operating system setup creates a computer administrator account and can add any number of users during the initial setup. All user accounts created during setup have administrator rights.

After initial operating system setup, the computer administrator or a user with administrator rights can create additional user accounts.

NOTE: Different account options are available when a Windows XP Professional computer is connected to a domain.

To add users, perform the following steps:

1. Click the **Start** button, and click **Control Panel**.

2. In the **Control Panel** window, click **User Accounts**.

3. In the **User Accounts** window under **Pick a Task**, click **Create a new account**.

4. In the box under **Name the new account**, type the name of the new user. Click **Next>**.

5. Under **Pick an account type**, click the bullet next to the type of account you are going to create — **Computer administrator** or **Limited**.

- Computer administrators can change all computer settings.
- Limited account users can change only a few settings such as their own passwords.

6. Click **Create Account**.

After the accounts are created, each shows up on the main user screen.

Home and Small Office Networking

The Network Setup Wizard includes a checklist and steps to guide you through the process of sharing resources, such as files, printers, or an Internet connection, between computers in a home or small office. In Windows XP, Microsoft has improved the online documentation and usability of operating-system tools for setting up a home or small office network. New features in the operating system include support for the Point-to-Point Protocol over Ethernet (PPPoE) and a built-in firewall.

Network Setup Wizard

The Home Network Wizard first appeared in Windows Me. To make setting up a home or small office network easier, Microsoft developed an enhanced Network Setup Wizard for Windows XP. This version provides more complete online documentation and support for setting up a home or small office network. The new wizard automatically enables the personal firewall discussed later in this section (see "Internet Connection Firewall").

To use the wizard, perform the following steps:

1. Click the **Start** button, point to **All Programs—> Accessories—> Communications**, and click **Network Setup Wizard**.
2. When the Network Setup Wizard appears, click **Next>**.
3. Click **checklist for creating a network**.

   The checklist leads you through the steps necessary to set up a home or small office network and provides extensive references for each step. When you have completed the necessary connections and preparations, return to the **Network Setup Wizard**.

4. Select the Internet connection method and click **Next>**.
5. Select the desired Internet connection if required, and click **Next>**.
6. Type a description of the computer and a computer name, and then click **Next>**.
7. Review the network settings and click **Next>** to finish the setup.
8. When the setup process is complete, click **Finish** to close the wizard.

Internet Connection Firewall

Today's always-on cable modem and DSL Internet access connections offer unprecedented bandwidth to the home, but also leave the connected computer or home network vulnerable to hacker attacks. The nature of these attacks varies, but the goal is to gain access to individual computers attached to the Internet. With this access, a hacker can browse the hard drive and add or delete files, discover passwords and credit card numbers, and set the system up to launch attacks on other systems or websites. As a result, firewall protection from these attacks is increasingly required on computers. Recognizing this need, Microsoft provides an integrated firewall in Windows XP to provide immediate protection from outside access attempts. When enabled, the Internet Connection Firewall provides basic protection suitable for most home and small office users. The Internet Connection Firewall is disabled when the computer is connected to a domain.

NOTE: Enabling the Internet Connection Firewall does not reduce the need for virus-checking software.

The firewall is automatically enabled when you run the Network Setup Wizard. When the firewall is enabled for a network connection, its icon appears with a red background in the **Network Connections** portion of the Control Panel. The Internet Connection Firewall can be applied to each Internet connection on the computer. The firewall also provides basic logging capabilities. Not all events that appear in the log are hacker attacks. Many different types of harmless events can appear in the log, such as routine checks by an Internet Service Provider to verify the presence of your computer (pings).

The firewall is configured using the **Properties** dialog box associated with each Internet connection in the Control Panel. The firewall can be enabled or disabled. Additional configuration options are available for more advanced users. These advanced options include the ability to open or close specific Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) ports or to enable port redirection. Port redirection allows access requests to a specific port on the firewall (such as port 80, the Web server port) to be automatically redirected to another computer on the local network. This capability allows a Web server on a home network to be protected by an edge firewall.

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